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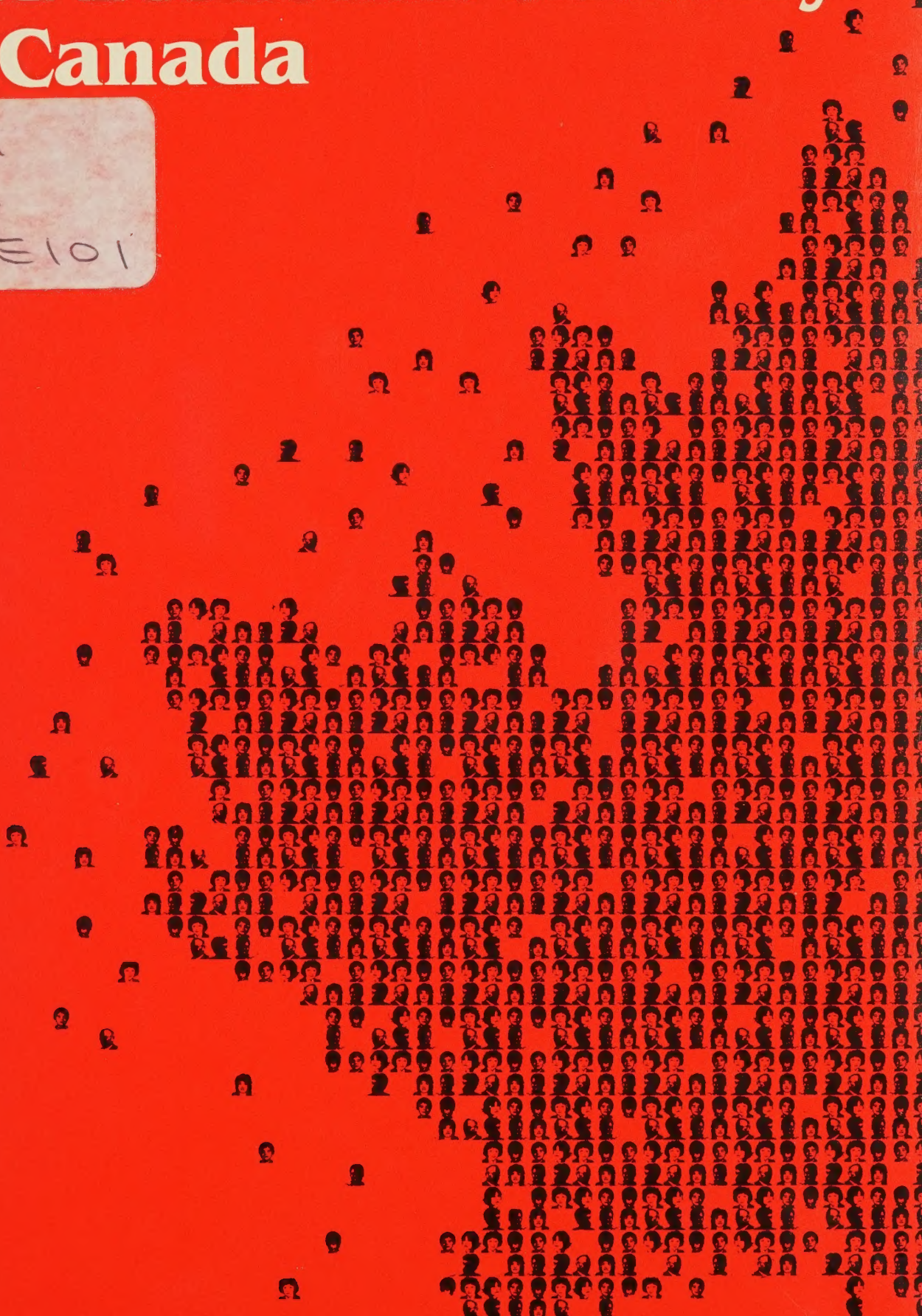
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FRANÇOIS VAILLANCOURT, Research Coordinator

Income Distribution and Economic Security in Canada

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This is Volume 1 in the series of studies commissioned as part of the research program of the Royal Commission on the Economic Union and Development Prospects for Canada.

The studies contained in this volume reflect the views of their authors and do not imply endorsement by the Chairman or Commissioners.



Income Distribution and Economic Security in Canada

FRANÇOIS VAILLANCOURT
Research Coordinator

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When the members of the Rowell-Sirois Commission began their collective task in 1937, very little was known about the evolution of the Canadian economy. What was known, moreover, had not been extensively analyzed by the slender cadre of social scientists of the day.

When we set out upon our task nearly 50 years later, we enjoyed a substantial advantage over our predecessors; we had a wealth of information. We inherited the work of scholars at universities across Canada and we had the benefit of the work of experts from private research institutes and publicly sponsored organizations such as the Ontario Economic Council and the Economic Council of Canada. Although there were still important gaps, our problem was not a shortage of information; it was to interrelate and integrate — to synthesize — the results of much of the information we already had.

The mandate of this Commission is unusually broad. It encompasses many of the fundamental policy issues expected to confront the people of Canada and their governments for the next several decades. The nature of the mandate also identified, in advance, the subject matter for much of the research and suggested the scope of enquiry and the need for vigorous efforts to interrelate and integrate the research disciplines. The resulting research program, therefore, is particularly noteworthy in three respects: along with original research studies, it includes survey papers which synthesize work already done in specialized fields; it avoids duplication of work which, in the judgment of the Canadian research community, has already been well done; and, considered as a whole, it is the most thorough examination of the Canadian economic, political and legal systems ever undertaken by an independent agency.

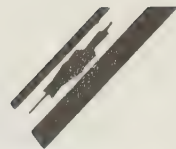
The Commission's Research Program was carried out under the joint direction of three prominent and highly respected Canadian scholars: Dr. Ivan Bernier (*Law and Constitutional Issues*), Dr. Alan Cairns (*Politics and Institutions of Government*) and Dr. David C. Smith (*Economics*).

Dr. Ivan Bernier is Dean of the Faculty of Law at Laval University. Dr. Alan Cairns is former Head of the Department of Political Science at the University of British Columbia and, prior to joining the Commission, was William Lyon Mackenzie King Visiting Professor of Canadian Studies at Harvard University. Dr. David C. Smith, former Head of the Department of Economics at Queen's University in Kingston, is now Principal of that University. When Dr. Smith assumed his new responsibilities at Queen's in September, 1984, he was succeeded by Dr. Kenneth Norrie of the University of Alberta and John Sargent of the federal Department of Finance, who together acted as co-directors of Research for the concluding phase of the Economics research program.

I am confident that the efforts of the Research Directors, research coordinators and authors whose work appears in this and other volumes, have provided the community of Canadian scholars and policy makers with a series of publications that will continue to be of value for many years to come. And I hope that the value of the research program to Canadian scholarship will be enhanced by the fact that Commission research is being made available to interested readers in both English and French.

I extend my personal thanks, and that of my fellow Commissioners, to the Research Directors and those immediately associated with them in the Commission's research program. I also want to thank the members of the many research advisory groups whose counsel contributed so substantially to this undertaking.

DONALD S. MACDONALD



At its most general level, the Royal Commission's research program has examined how the Canadian political economy can better adapt to change. As a basis of enquiry, this question reflects our belief that the future will always take us partly by surprise. Our political, legal and economic institutions should therefore be flexible enough to accommodate surprises and yet solid enough to ensure that they help us meet our future goals. This theme of an adaptive political economy led us to explore the interdependencies between political, legal and economic systems and drew our research efforts in an interdisciplinary direction.

The sheer magnitude of the research output (over 280 separate studies in 72 volumes) as well as its disciplinary and ideological diversity have, however, made complete integration impossible and, we have concluded, undesirable. The research output as a whole brings varying perspectives and methodologies to the study of common problems and we therefore urge readers to look beyond their particular field of interest and to explore topics across disciplines.

The three research areas, *Law and Constitutional Issues* under Ivan Bernier, *Politics and Institutions of Government* under Alan Cairns, and *Economics* under David C. Smith (co-directed with Kenneth Norrie and John Sargent for the concluding phase of the research program) — were further divided into 19 sections headed by research coordinators.

The area *Law and Constitutional Issues* has been organized into five major sections headed by the research coordinators identified below.

- Law, Society and the Economy — *Ivan Bernier and Andrée Lajoie*
- The International Legal Environment — *John J. Quinn*
- The Canadian Economic Union — *Mark Krasnick*
- Harmonization of Laws in Canada — *Ronald C.C. Cuming*
- Institutional and Constitutional Arrangements — *Clare F. Beckton and A. Wayne MacKay*

Since law in its numerous manifestations is the most fundamental means of implementing state policy, it was necessary to investigate how and when law could be mobilized most effectively to address the problems raised by the Commission's mandate. Adopting a broad perspective, researchers examined Canada's legal system from the standpoint of how law evolves as a result of social, economic and political changes and how, in turn, law brings about changes in our social, economic and political conduct.

Within *Politics and Institutions of Government*, research has been organized into seven major sections.

- Canada and the International Political Economy — *Denis Stairs and Gilbert Winham*
- State and Society in the Modern Era — *Keith Banting*
- Constitutionalism, Citizenship and Society — *Alan Cairns and Cynthia Williams*
- The Politics of Canadian Federalism — *Richard Simeon*
- Representative Institutions — *Peter Aucoin*
- The Politics of Economic Policy — *G. Bruce Doern*
- Industrial Policy — *André Blais*

This area examines a number of developments which have led Canadians to question their ability to govern themselves wisely and effectively. Many of these developments are not unique to Canada and a number of comparative studies canvass and assess how others have coped with similar problems. Within the context of the Canadian heritage of parliamentary government, federalism, a mixed economy, and a bilingual and multicultural society, the research also explores ways of rearranging the relationships of power and influence among institutions to restore and enhance the fundamental democratic principles of representativeness, responsiveness and accountability.

Economics research was organized into seven major sections.

- Macroeconomics — *John Sargent*
- Federalism and the Economic Union — *Kenneth Norrie*
- Industrial Structure — *Donald G. McFetridge*
- International Trade — *John Whalley*
- Income Distribution and Economic Security — *François Vaillancourt*
- Labour Markets and Labour Relations — *Craig Riddell*
- Economic Ideas and Social Issues — *David Laidler*

Economics research examines the allocation of Canada's human and other resources, how institutions and policies affect this allocation, and the distribution of the gains from their use. It also considers the nature of economic development, the forces that shape our regional and industrial structure, and our economic interdependence with other countries. The thrust of the research in economics is to increase our comprehension of

what determines our economic potential and how instruments of economic policy may move us closer to our future goals.

One section from each of the three research areas — The Canadian Economic Union, The Politics of Canadian Federalism, and Federalism and the Economic Union — have been blended into one unified research effort. Consequently, the volumes on Federalism and the Economic Union as well as the volume on The North are the results of an interdisciplinary research effort.

We owe a special debt to the research coordinators. Not only did they organize, assemble and analyze the many research studies and combine their major findings in overviews, but they also made substantial contributions to the Final Report. We wish to thank them for their performance, often under heavy pressure.

Unfortunately, space does not permit us to thank all members of the Commission staff individually. However, we are particularly grateful to the Chairman, The Hon. Donald S. Macdonald, the Commission's Executive Director, Gerald Godsoe, and the Director of Policy, Alan Nymark, all of whom were closely involved with the Research Program and played key roles in the contribution of Research to the Final Report. We wish to express our appreciation to the Commission's Administrative Advisor, Harry Stewart, for his guidance and advice, and to the Director of Publishing, Ed Matheson, who managed the research publication process. A special thanks to Jamie Benidickson, Policy Coordinator and Special Assistant to the Chairman, who played a valuable liaison role between Research and the Chairman and Commissioners. We are also grateful to our office administrator, Donna Stebbing, and to our secretarial staff, Monique Carpentier, Barbara Cowtan, Tina DeLuca, Françoise Guilbault and Marilyn Sheldon.

Finally, a well-deserved thank you to our closest assistants, Jacques J.M. Shore, *Law and Constitutional Issues*; Cynthia Williams and her successor Karen Jackson, *Politics and Institutions of Government*; and I. Lilla Connidis, *Economics*. We appreciate not only their individual contribution to each research area, but also their cooperative contribution to the research program and the Commission.

IVAN BERNIER
ALAN CAIRNS
DAVID C. SMITH



This volume is made up of an overview study and seven papers examining aspects of income distribution and economic security in Canada. Most of the papers are surveys of available evidence on the issues, a reflection of the decision taken at the start of the Commission's research program, in spring and summer 1983, to make as much use as possible of existing knowledge and expertise. This decision marks a departure from the practice of past Royal Commissions and reflects the level of research available among Canadian economists, political scientists and lawyers. At the same time it was decided that the studies should be useful contributions to public policy debate and accessible to non-economists; hence, authors were asked to assign as much as possible of the more technical material to notes or appendixes.

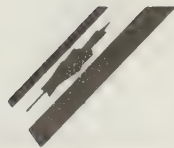
The adaptability of the Canadian economy to internal and external shocks in both the short and long term was the theme behind the choice of issues addressed by the research program, and work was concentrated in three areas: the interaction between labour market activity and income maintenance programs; the effects on the Canadian economy of a population that is expected to age between 1980 and 2050; and general government policy and income distribution. The list of topics for the volume was refined in late 1983 and early 1984 as the needs of the Commission evolved. The assignment of a topic to the overview or a specific paper depended on the qualified researchers available at short notice and on the relative importance accorded to various issues. The overview thus deals with issues for which a research paper could not be obtained (income distribution), with issues of lesser importance (housing), and with issues of particular interest to the coordinator (earnings of Canadians), in addition to presenting in summary form the findings of the papers in these volumes.

The area of income distribution touches such topics as the theory of income distribution, the measurement of income, the indicators of inequality, and the source of changes in the distribution of income, and the last three issues are discussed in the first part of the overview. The second paper in the volume, by Mireille Éthier, examines the various methodologies used to estimate the size of the underground economy, reviews Canadian studies, and presents new results for Canada in the 1970s. The paper by B.G. Dahlby outlines the results of studies of the incidence of government expenditures and taxes in Canada by income groups and points out the strengths and weaknesses of the various methods used. Readers are also referred to two other papers in this area: Lars Osberg, "The Measurement of Economic Well Being," in *Approaches to Economic Well-Being*, volume 26 of the research studies prepared for this Royal Commission, and Alice Nakamura and Masao Nakamura, "A Survey of Research on the Work Behaviour of Canadian Women," in *Work and Pay: The Canadian Labour Market*, volume 17 of the research studies.

On economic security, Bernard Fortin presents data on the importance of the various expenditures on social security in Canada and then goes on to discuss the efficiency costs associated with these programs, and in particular the impact of their tax rates on labour supply, as well as the redistributive benefits of these programs. Three papers examining specific programs in more detail follow. Jean-Michel Cousineau looks at the effects of unemployment insurance on the labour market behaviour of Canadians. Mireille Éthier describes the pension system in Canada, examines its economic effects and proposed reforms, and addresses the issue of an aging population. Gilles Grenier discusses the cost and distributional aspects of the health care system in Canada and the impact of an aging population on health care costs. Other papers that address social issues include A.G. Blomqvist, "Political Economy of the Canadian Welfare State," in *Approaches to Economic Well-Being*, volume 26 of the studies, and Robin Boadway, "Federal-Provincial Transfers in Canada: A Critical Review of the Existing Arrangements," in *Fiscal Federalism*, volume 65 of the studies.

The last paper in this volume is of a more speculative nature. In it, Jonathan Kesselman proposes reforms to both income transfers and the unemployment insurance system to encourage the productive use of unemployed individuals.

FRANÇOIS VAILLANCOURT



This volume would not have been possible without the help of a great number of individuals. The economists whose papers appear in this volume accepted the difficult task of producing, on short notice and under strict time constraints, papers that would review the most recent material in their assigned area and convey the results in intelligible terms to laypersons. The members of my Research Advisory Group — Charles Beach from Queen's University, Richard Bird from the University of Toronto, Eden Cloutier from the Economic Council of Canada, Irwin Gillespie from Carleton University, Pierre Lefèbvre from Université du Québec à Montréal, and Doug May from Memorial University — gave me extremely useful advice on the research program and commented extensively on the first version of most of the papers of this volume, as did Michael Wolfson, then of the Ministry of State for Social Development. David C. Smith, Principal of Queen's University and Research Director of Economics for the Royal Commission from February 1983 to August 1984, gave me the opportunity to undertake this assignment and provided sage and timely advice, as always; and my fellow research coordinators, particularly Craig Riddell, also gave much valued help. The various referees, who must remain anonymous, provided critiques that helped improve the papers of the volume. I also wish to thank Mireille Éthier, research analyst in the income distribution and economic security area; I. Lilla Connidis, executive assistant (and thus indispensable!); the secretarial staff of the research group at the Commission; and the staff of the Centre de recherche et développement en économie of the Université de Montréal for their vital assistance. Finally, to my wife Louise and my son Luc, thanks for their patience.

F.V.



Income Distribution and Economic Security in Canada: *An Overview*

FRANÇOIS VAILLANCOURT

The introduction to this volume sets out the general purpose and themes of the research program in the area of income distribution and economic security and the research program's links with other research programs. This overview addresses specific issues in the research area. In the case of issues that are covered by studies in the volume, the overview highlights key points, often complementing them with institutional details. Issues not addressed by separate papers are dealt with in greater depth, with references to existing sources and some original work.

The overview is divided in two parts. The first bears on the level and distribution of income and the second on economic security. The first section of the first part examines the mean income of Canadians and compares it with the income of residents of other industrialized countries. The second section examines the distribution of income in Canada, first addressing various conceptual issues and matters concerning data, then examining changes in income distribution from 1951 to 1981, and finally comparing income distribution with the distribution of income in other industrialized countries. The third section examines poverty, dividing the Canadian population into the poor and the non-poor. The fourth section examines in some detail the determinants of Canadians' main source of income, their earnings.

The second part of the overview examines the programs in Canada that transfer resources, both money and in-kind transfers, from one set of individuals to another. Both money transfers under the unemployment insurance, welfare, family allowance, and pension systems and payments in-kind in the fields of health, housing, and education are examined in terms of the effects of transfers on the efficiency of markets and on the distribution of income.

In both parts of the paper, study is limited to the period following World War II and particular emphasis is given to the period since 1960. Although the paper draws on published material, it does not review all the literature on each issue. Such an undertaking is beyond the scope of an overview and would often overlap the contents of the survey papers in this volume.

The Incomes of Canadians

Ideally, this part of the overview would be entitled “The Well-being of Canadians” and would examine the mean level and the distribution of an indicator of well-being. Unfortunately, no data on well-being, however defined, are available, and so data on money income must be used instead. The reader should be aware that money income is an incomplete measure of well-being for at least four reasons.¹ First, income, defined comprehensively as the sum of consumption and changes in non-human wealth in a given period, should include items often excluded from data on money income. The National Accounts include some of these items but usually ignore some increases in wealth. Second, neither the Survey of Consumer Finances nor National Accounts data take into account the value of household production. Therefore the increase in Gross National Product (GNP) associated with the increased labour market of women may overstate the increase in total output if households simultaneously reduced their production of goods such as meals and housekeeping. Third, the value of leisure is not included in these data. Fourth, other dimensions of well-being, such as life expectancy, are not accounted for in income data.

In this overview, we try to take into account the first weakness; we also present data on life expectancy. That said, we believe that, if not an ideal indicator, money income is at least a reasonable indicator of both the level and distribution of economic well-being between and within countries.

The Level of Incomes

To measure changes in the level of Canadians’ money income, the available data must be used on a reasonably consistent basis for the period studied. The period covered here is 1951 to 1981.² In Canada, there are four possible sources of income data for that period: the census, the Survey of Consumer Finances, the National Accounts, and taxation statistics. The main characteristics of each source are shown in Table 1-1.

As Table 1-1 shows, each source has its advantages and disadvantages. Taxation statistics are the least useful source, since the data coverage varies with changes in the definition of income to be reported and the use made of annual tax returns to deliver various government programs.³ Therefore these data are not used in this part of the paper, although data on tax expenditures are used in the second part of the paper. The other three sets of data are used in examining Canadians’ level of income. National

TABLE 1-1 Canadian Data Source for Measurement of Income, 1951-81

Characteristics		Survey of Consumer Finance			National Accounts		Taxation Statistics	
Income Concept	Census	Finance			National Accounts		Taxation Statistics	
Income Concept	Money income	Money income (excluding military pay)			Money and non-money (imputed rent on owner-occupied housing) income		Money income (excludes some government transfers)	
Population	All Canadians	All persons in Canada except residents of Indian reservations, and of Yukon and the Northwest Territories, inmates of institutions, and armed force personnel ^a			All Canadians		Tax filers	
Frequency	1961 ^b , 1971, 1981 (in 1951 only money wages were surveyed)	1951, 1954, 1957, 1961, 1963, 1965, 1967, 1969, 1971, annual since then			Annual (since 1926)		Annual (since 1946)	
Collection Technique	1/5 sample in 1961; 1/3 in 1971; 1/5 in 1981	Probability sample of Canadian dwellings drawn from Labour Force Survey in some years			Calculated from various sources		Sample of returns is tabulated	
Produced by	Statistics Canada	Statistics Canada			Statistics Canada		Revenue Canada	
Distributional Information Available	Yes: income groups	Yes: income groups quintile, Gini coefficient			No		Yes: income groups	
Breakdown of Type of Individual (sex, age, etc.)	Yes: detailed	Yes: some details			No		Yes: limited	

a. Also excludes the farm population before 1965.

b. Incomes of the farm population were excluded in 1961.

Accounts data are also used to calculate GNP per capita, and Survey of Consumer Finances data are used extensively in the discussion of income distribution.

The average real income of Canadians more than doubled between 1951 and 1981, as shown in Table 1-2. Various factors can explain this change. For example, changes in workers' schooling, in the capital stock per worker, and in technology are some of the determinants of increased labour productivity. This increase lead to higher real wages and thus higher real income (wages being the most important component of income in Canada).

How does the real income of Canadians compare with that of residents of other countries, and how does the growth of income in Canada compare with the performance of other countries? The answers to these questions are found in Table 1-3.

**TABLE 1-2 Per Capita Income of Canadians, 1951-81,
Current and Constant Dollars**

Data Source/ Income Concept	Per Capita Income (\$)				Income Ratio	
	1951	1961	1971	1981	1981/ 1961	1981/ 1951
National Accounts/Gross National Product						
Current (1)	1,545	2,174	4,379	13,959	6.42	9.03
Constant (2) (1951 \$)	1,545	1,913	2,890	3,889	2.03	2.51
Survey of Consumer Finance/Money Income						
Current (3)	989 ^a	1,459 ^a	2,891	9,636	6.60	9.74
Constant (4) (1951 \$)	989 ^a	1,284 ^a	1,908	2,685	2.09	2.71
Census/Money Income						
Current (5)	—		2,705 ^b	8,542 ^b		—
Constant (6) (1951 \$)	—		1,785	2,380		—

Sources: Line 1 GNP; Statistics Canada, "Historical Data Compendium," prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa, 1984), Table 2.9; divided by Population: *ibid.*, Table 1.1.

Line 2 Line 1 divided by Consumer Price Index: *ibid.*, Table 11.4.

Line 3 *Ibid.*, Table 14.3.

Line 4 *Ibid.*

Line 5 Statistics Canada, *1971 Census of Canada: Families by Size and Type*, cat. no. 93-714; *1971 Census of Canada: Income of Families, Family Head and Non Family Persons*, cat. no. 93-724, Tables 81 and 84; *1981 Census of Canada: Economic Family in Private Households, Income and Selected Characteristics*, cat. no. 92-937, Tables 5, 7A and 7B.

Line 6 Line 5 divided by Consumer Price Index.

a. Non-agricultural population only.

b. Income for the year preceding the census (1970 and 1980). Note that there are some differences between 1971 and 1981. Income of individuals residing in collective dwellings is excluded in 1981 and included in 1971. The interested reader should consult the appropriate census.

TABLE 1-3 Gross Domestic Product (GDP) Per Capita in Nominal and Real Terms and Rate of Growth of GNP, for Canada and Eight Other Countries

	GDP Per Capita in 1980				Average Annual Growth of GNP 1960-80	
	Nominal Measure		Real Measure		%	Rank
	\$ (1)	Rank (2)	\$ (3)	Rank (4)		
Canada	10,270	6	11,430	2	3.3	5
Austria	10,270	6	8,048	7	4.1	2
France	12,180	2	9,010	4	3.9	3
Federal Republic of Germany	13,240	1	9,400	3	3.3	5
Italy	7,000	9	7,180	9	3.6	4
Japan	8,910	8	8,140	6	7.1	1
Netherlands	11,970	3	8,590	5	3.2	6
United Kingdom	9,390	7	7,610	8	2.2	11
United States	11,450	4	11,450	1	2.3	9

Sources: Columns (1) to (4) — Peter Hill, “Real Gross Product in OECD Countries and Associated Purchasing Power Parities,” Working Paper No. 17, (Paris: OECD, Economics and Statistics Department, 1984), Table 1.
Columns (5) and (6) — *World Labour Report I* (Geneva: International Labour Office, 1984), Table 5.1, page 118.

Notes: The results of column (1) are obtained by transforming the GDP per capita of each country measured in its currency into US \$. The results of column (3) also account for differences in price levels between countries; they are volume measures based on international prices. In columns (2) and (4), the ranks are from the highest to the lowest.

The first two columns of Table 1-3 provide data on 1980 Gross Domestic Product (GDP) per capita in U.S. dollars. Such a comparison is misleading, however, because it does not account for differences in price levels among countries. The purchasing power parity measures (columns 3 and 4) do take into account these differences; they indicate that in 1980 Canada had the second highest standard of living of the nine countries studied. Indeed, one should heed Hill’s warning that “nominal and real figures tell a very different story, and there is no doubt that the nominal figures can be very misleading if they are interpreted as measuring differences in productivity or living standards between countries” (Hill, 1984, p. 10). Canada’s rate of growth of GNP is neither the worst nor the best amongst industrialized countries (columns 5 and 6). Indeed, it is similar to the performance of 19 industrialized countries that had an average per capita GNP of US\$10,320 in 1980 and a 3.6 percent growth rate from 1960 to 1980 (ILO, 1984, p. 120).⁴ These data indicate that the real income of Canadians has grown since 1951 at a rate comparable to that of other industrialized countries.

Income Distribution

This section on income distribution is divided into three subsections. The first one examines conceptual issues and briefly discusses the data used in our examination of the Canadian situation. The second presents results on the distribution of income for the 1951–81 period and discusses our findings. The third compares Canada's results with those of other countries.

CONCEPTUAL ISSUES AND CANADIAN DATA

Three questions must be answered before analyzing the distribution of income: Whose income? What income? What indicator of income inequality? Whose income to measure must be asked because the distribution of income can be measured across individuals (of a minimum age) or across family units, however defined. In general, the use of data on individuals yields a less equal distribution of income than data on the family unit. This overview uses data on economic units, which include families and unattached individuals and thus account for income sharing within a family.⁵ However, we do not use equivalence scales to account for differences in need owing to differences in unit size.⁶ The use of such scales would modify the degree of measured inequality.

What income to measure raises two questions. First, how is income defined at a given time? Does it include part or all of money income? Should some money income be omitted, such as capital gains or non-money income, like the value of services received from an owner-occupied house? Should only transfers of money from government be included, and not in-kind transfers such as education, health, and housing? The inclusion of all government activity can have a significant effect on the share of income going to the lower income group. The issue of government activity is addressed in the paper by Dahlby in this volume. The effects of some of the exclusions of money and non-money income on the distribution of income are discussed in the next subsection.

Second, what length of accounting period should be used? Use of lifetime income permits a better account for the concave shape of the standard age-income profile and for temporary variations in income. It also results in lower estimates of inequality.⁷ Indeed Wolfson (1975), using Canadian data,⁸ concluded that “average (over the 1965–70 period) deflated income was somewhat more equitably distributed than annual income” (p. 49). He also found a strong relationship between having a lower income and having a more variable income. Such a relationship may mean that for low income units, lifetime income is not a good indicator of whether at a given time a unit has the minimum income necessary in life.

Finally, what indicator of income inequality should be used? Love and Wolfson (1976), Osberg (1981), and Gunderson (1983) have discussed the choice of an appropriate measure of income inequality. In addition to the share of income of various subgroups of the population, summary measures — such as the Gini coefficient, the coefficient of variation, the Theil index, and the Atkinson index — can be used to represent the degree of inequality. Each summary measure has its failings, as Osberg (1981) pointed out (p. 25). This overview uses data on quintile shares and the Gini coefficient. Both measures are readily available for Canada since 1951 and are widely used.⁹

The data used here are taken from the Survey of Consumer Finances (SCF), a survey of families and unattached individuals conducted periodically between 1951 and 1971 and annually since 1971. The surveys were initially restricted to the non-farm population, but since 1965 the sample has represented almost all private households in Canada.

In these surveys, the family is defined as a group of individuals sharing a common dwelling unit and related by blood, marriage, or adoption. Thus, all relatives living together at the time of the survey are considered to be a family, whatever the type of family relationship. The head of the family in husband-wife families is, by definition, the husband. An unattached individual is a person living alone or in a household where he or she is not related to other household members.

The income of a unit consists of income from gross wages and salaries, net income from self-employment (gross income minus expenses), investment income, government transfer payments (which include family allowances, child tax credit, unemployment insurance, workers' compensation, training allowances, veterans' pensions and allowances, mothers' allowances, pensions to the blind and the disabled), pensions, and miscellaneous income (for example, scholarships or alimony). Several types of income — capital gains or losses, gambling gains and losses, and income in-kind such as free meals or living accommodation — are excluded from the SCF.

Several groups of Canadians are omitted from the survey. Since 1965, the SCF sample has excluded residents of Yukon and the Northwest Territories, members of households on Indian reserves, and inmates of institutions (for example, prisons and long-term-care hospitals). In addition, individuals and family units whose major source of income was military pay and allowances, although surveyed, are excluded from all tabulation.¹⁰

Do the data from the SCF represent the true distribution of income in Canada? This question cannot be answered since the true distribution of income is unknown. However, the following conclusions can be drawn:

- The sample size of the SCF is not a source of incorrect results.¹¹

- The income of both low income units and high income units is underestimated by the SCF.¹²
- The exclusion of particular groups from the SCF is unlikely to affect seriously the measurement of the distribution of income (see Appendix A).
- The definition of income used in the SCF excludes part of the real command of Canadians over goods and services. Including some of these items (in particular, capital gains, services from owner-occupied housing, and fringe benefits) in the SCF would increase measured inequality (see Appendix A).¹³

It could also be argued that income distribution is incorrectly measured because the underground economy is not captured adequately by the SCF. For this hypothesis to be true, the underground economy must be of significant size and generate income distributed in a different fashion from that of income recorded in the survey.

Éthier's paper on the underground economy in this volume reviews methods used to estimate its size and concludes that the most common method, the monetary method, probably yields the best estimates. This method is based on the amount of cash used and its velocity of circulation. Canadian studies carried out using the monetary method estimate the underground economy as worth somewhere between 4 and 22 percent of GNP in 1976.

Éthier also reports original results. Using an approach similar to the monetary method, she estimates that the underground economy was worth 7.3 percent of GNP in 1976. We can therefore argue that in Canada, the underground economy as defined by Éthier is probably worth between 5 and 10 percent of GNP in the 1980s. Unfortunately, because of the nature of underground economic activity, it is difficult to obtain estimates of its effect on the distribution of income. One can put forward, however, a few conjectures.

First, the under-reporting by non-transfer recipients of labour income is probably done by prime-age workers who have the energy to moonlight and have a high marginal tax rate. These individuals and their families are probably in the third, fourth, and fifth quintiles. Second, the under-reporting of capital income, either from abroad or from person-to-person transactions (loans) implies that under-reporters have used up the various tax exemptions associated with capital income (interest deductibility, etc.) and are thus likely to have a reasonable amount of financial assets. These individuals or their families probably belong to the fifth income quintile. Third, individuals (or their families) who work illicitly while receiving unemployment insurance or welfare payments are probably in the second, third, and fourth income quintiles, and are not elderly. Fourth, criminals are probably distributed throughout the various income quintiles in such a way that the measured distribution of income is not affected. For example, there are both part-time and full-time retail and wholesale drug dealers.

INCOME DISTRIBUTION IN CANADA, 1951-81

Table 1-4 shows the distribution of income by quintile for 1981.¹⁴ The composition of incomes and some of the sociodemographic characteristics of the units belonging to each quintile are also presented. The distribution is not equal: the 20 percent of units (families and unattached individuals) in the first quintile received 4.6 percent of the total income in Canada, whereas the 20 percent of units in the fifth quintile received 41.8 percent of income.¹⁵

What are the characteristics of the recipients of low and high incomes? Low income units receive most of their income from transfer payments whereas high income units receive most of their income from wages and salaries. This may be explained in part by the older age of members of

**TABLE 1-4 The Distribution of Income in Canada,
Money Income, Quintile Data; 1981, All Units**

	Quintiles					Total
	First (lowest)	Second	Third	Fourth	Fifth (highest)	
Share of Total Income Received (1)	4.6	10.9	17.6	25.2	41.8	100.0
Composition of income within each quintile (2)	(Percentages sum vertically to 100%)					
Wages and salaries	27.6	57.4	77.5	83.2	79.9	75.5
Net income from self-employment	2.3	5.2	4.5	4.2	7.5	5.6
Investment income	7.5	9.0	6.2	5.5	8.3	7.3
Transfer payments	57.3	22.7	8.8	5.0	2.6	9.0
Other money income	5.4	5.7	3.0	2.1	1.7	2.6
Characteristics of Units within Quintiles (3)	(Percentages sum vertically to 100% within categories)					
Age						
24 and under	17.3	13.5	9.5	5.2	2.0	9.5
25-64	45.0	60.3	80.4	88.3	93.0	73.4
65 plus	37.7	26.2	10.1	6.5	5.0	17.1
Sex						
Male	43.5	68.5	82.7	91.8	95.7	76.4
Female	56.5	31.5	17.3	8.2	4.3	23.6
Family characteristics						
Unattached individual	67.2	37.4	23.1	9.9	4.3	28.4
Single-parent female-head	11.0	8.0	5.9	3.4	1.7	6.0
Married couples	19.3	49.9	66.6	82.8	90.9	61.9
Other families	2.5	4.7	4.4	3.9	3.1	3.7

Source: Statistics Canada, *Income Distributions by Size in Canada, 1981*, cat. no. 13-207, (1) Table 74, p. 146; (2) Table 75, p. 147; (3) Table 78, pp. 153-54.

low income units. In addition, low income units are made up mainly of unattached individuals and single-parent families headed by women; high income units consist almost entirely of married couples.

Thus there seems to be a link between some of the sociodemographic characteristics of units and their income. Indeed, as Beach, Card, and Flatters (1981) have shown, an analytical framework can be constructed that explains in part the income of families and individuals. That framework explains earnings better than it does investment income and can establish better links between income and the age and family structure of a unit than between income and other demographic characteristics. For example, in the case of men, the framework suggests a concave earnings profile across ages, with a peak in later middle age (50 to 60). The reason is that most men acquire their formal education between ages 15 and 25; work full time afterward; see their real earnings increase with experience, level off, and decrease; and retire by 65.

The results presented in Table 1-4 do not take into account the effect of taxes and government expenditures other than personal transfers on the distribution of income. The paper by Dahlby in this volume addresses the issue of the incidence of government taxes and expenditures and concludes that there is great uncertainty about who benefits from government expenditures and who bears the tax. Although it can be argued that money transfers primarily benefit their recipients, it is more difficult to determine the distribution of benefits from such goods and services as the justice system or national defence to various income groups.

Nor is it always clear who bears the burden of a tax. Although it is usually agreed that the income tax is borne by those who legally must pay it, it is often argued that some taxes can be shifted from those legally responsible for paying them to others. For example, some economists argue that the burden of the corporate income tax, which should be borne by the owners of capital (shareholders), is in practice shifted in total or in part to consumers through higher prices and to workers through lower wages.

Dahlby concludes that studies that examine the effect of one specific expenditure are more likely to yield meaningful results than others. The studies he surveyed did not examine the effect of the government as a regulator on the distribution of income.¹⁶

Two additional sets of results are presented here. Table 1-5 provides data on the effect of money transfers and income taxes on the distribution of income in 1981, and Table 1-6 presents data on the effects of money transfers and in-kind education and health expenditures on the distribution of income in 1974. Although personal income taxes and in-kind education and health transfers reduce inequality in the distribution of income, they do not have as large an effect as money transfers.

We now turn to an examination of the evolution of the distribution of income in Canada over time. Table 1-7 presents data for 1951 to 1981.

**TABLE 1-5 Income Shares by Quintile and Gini Coefficients,
1981, All Units**

Income Concept	Quintile Shares					Gini Coefficients
	First (lowest)	Second	Third	Fourth	Fifth (highest)	
Income before Transfers	1.4	9.6	17.8	26.4	44.9	0.439
Total Money Income	4.6	10.9	17.6	25.2	41.8	0.377
Income after Tax	5.3	11.8	18.0	24.9	40.0	0.351

Source: Statistics Canada, *Income After Tax Distribution by Size in Canada, 1981*, cat. no. 13-210, Tables V and VI.

**TABLE 1-6 Income Shares by Quintile and Gini Coefficients,
1974, All Units**

Income Concept	Quintile Shares					Gini Coefficients
	First (lowest)	Second	Third	Fourth	Fifth (highest)	
Income before Transfers	1.3	9.8	18.0	25.8	45.2	0.441
Total Money Income	4.0	10.9	17.7	24.8	42.5	0.389
Total Money Income plus Public Education (Health) Transfers	4.5	11.2	17.9	24.8	41.7	0.375

Source: Statistics Canada, *Distributional Effects of Health and Education Benefits, Canada, 1974*, cat. no. 13-561, Table 1.

They indicate that the distribution of money income in Canada, which includes transfers and is not corrected for taxes paid, “has remained fairly constant over the post-World War II period. This is a surprising and highly important finding since a great deal has happened over the same period which might have been expected to change the income distribution” (Osberg, 1981, p. 25). Indeed, one could postulate from the evidence the existence of a “4-40” rule: 4 percent of income to the lowest group, 40 to the highest.

There is, unfortunately, no complete theoretical framework of the determinants of changes in aggregate measures of income distribution over time to explain the findings of Table 1-7. However, the major elements of such a framework can be found in the economic literature. For example, Beach,

TABLE 1-7 Income Inequality in Canada, 1951-81, Money Income, Quintile Shares and Gini Coefficients, All Units

Year	Quintile Shares					Gini Coefficients
	First (lowest)	Second	Third	Fourth	Fifth (highest)	
1951 ^a	4.4	11.3	18.3	23.3	42.8	0.390
1961 ^a	4.2	11.9	18.3	24.5	41.1	0.368
1971	3.6	10.6	17.6	24.9	43.3	0.400
1981	4.6	10.9	17.6	25.2	41.8	0.377

Sources: For 1951, 1961, Statistics Canada, *Income Distributions*, cat. no. 13-529, Table 12, p. 78; and for 1971, 1981, Statistics Canada, *Income Distributions by Size in Canada, 1981*, cat. no. 13-207, Table 74, p. 146. For Gini coefficients, 1951-71, R. Love and M.C. Wolfson, *Income Inequality: Statistical Methodology and Canadian Illustration* Ottawa: Statistics Canada, cat. no. 13-559, 1976, Table 6, p. 81; 1981, Statistics Canada, *Income after Tax Distribution by Size in Canada*, cat. no. 13-210, Text Table 6 (1981).

a. Non-farm units only.

Card, and Flatters (1981, p. 327) have indicated how “demographic factors and cohort effects interact to determine the observed cross-sectional structure of an income distribution” and that changes in these factors lead to change through time in the distribution of income. This overview examines four factors that may explain the evolution of the distribution of income in Canada over the 1951-81 period:

- changes in the data;
- changes in the composition of the population;
- changes in labour force participation; and
- changes in transfer payments.

The effect of cyclical fluctuations in macroeconomic activity on the distribution of income is not examined here. However, Buse (1982, p. 203) has found that for the 1947-78 period, “the size distribution (of income) . . . is insensitive to the major cyclical variables, inflation and unemployment.”

Changes in the Data Until 1965 and in particular in 1951 and 1961, the SCF excluded farm families. Farm families are likely to have lower money income than non-farm families. Could the 1951 and 1961 results therefore not be comparable to those of 1971 and 1981? The data provided in Table 1-8 shows that answer is no. Another factor that could have affected intertemporal comparisons is changes in the coverage of all incomes and of various types of income. However, a comparison of the coverage of the SCF and the National Accounts indicates no important changes over time.¹⁷

TABLE 1-8 Money Income, Quintile Data and Gini Coefficients, 1965, Farm Population Included and Excluded

Farm Population	Quintile Shares					Gini Coefficients
	First (lowest)	Second	Third	Fourth	Fifth (highest)	
Excluded	4.6	11.9	18.0	24.4	41.1	0.3658
Included	4.4	11.8	18.0	24.5	41.4	0.3701

Sources: For Quintile shares, farmers excluded, see Statistics Canada, *Income of Non-Farm Families and Individuals in Canada Selected Years 1951-65*, cat. no. 13-529, Table 12, p. 78; and for farmers included, see Statistics Canada, *Comparative Income Distributions 1965 and 1967*, cat. no. 13-539, Table 32, p. 53. For Gini Coefficients, see R. Love and M.C. Wolfson, *Income Inequality: Statistical Methodology and Canadian Illustration*, cat. no. 13-559, Table 6, p. 81.

Changes in the Composition of the Population Between 1951 and 1981, the average age of the Canadian population first fell (1951 to 1961) as the postwar baby boom occurred and then rose as the population 65 and over increased from 7.8 percent in 1951 to 9.7 percent in 1981.¹⁸ Furthermore, the percentage of one-person households increased from 7.9 percent in 1951 to 20.3 percent of all private households in 1981,¹⁹ as did the number of unattached individuals in income surveys.²⁰ The age distribution of unattached individuals changed between 1951 and 1981: the percentage of unattached individuals age 65 and over increased from 23.5 percent in 1951 to 28.6 percent in 1981, and those age 24 and under increased from 16.8 percent in 1951 to 19.3 percent in 1981.²¹

Unattached individuals have a lower mean income than family units. Thus an increase in the percentage of unattached individuals should lead to a decrease in the mean income of all units and of units in the first quintile.²² This decrease in the mean income of units in the first quintile should lead to a more unequal distribution of income. Indeed, MacLeod and Horner (1980) found that from 1954 to 1975 “changes in family composition (mainly an increase in the relative number of unattached individuals and a decrease in the relative number of couples with children) have themselves increased inequality” (p. 13). One should note, however, that the “undoubling” of households may reflect in part an increase in real income that gives individuals the choice of living by themselves.

Changes in Labour Force Participation The most important change in the composition of the labour force in Canada since 1951 has been the rise in the participation rate of women from 23.5 percent in 1951 to 28.7 percent in 1961 and to 51.7 percent in 1981.²³ The increase was particularly important in the case of married women (from 20.8 percent in 1961 to 51.0 percent in 1981). The percentage of families with more than one

earner has therefore increased from 33.1 percent in 1951 to 60.3 percent in 1981. This increase is concentrated in middle-income families (the second to fourth quintile).²⁴ As a result, the share of income of the middle class should increase, and income inequality could decrease. MacLeod and Horner (1980) found that for the 1954–75 period “the net effect of the increased labour force participation of married women on the distribution of income has been to reduce the level of inequality” (p. 10).

Changes in Transfer Payments Two questions are raised here. First, increased transfer payments should usually bring about greater income equality. This has not been observed. Is this partly or entirely because of decreased equality in the distribution of private income? The data provided in Table 1-9 shows that this is not the case, at least for the 1971–81 period; equality in the distribution of private income increased over these years.²⁵ Second, is the degree of targetting high and has it increased over time? The degree of targetting of transfer payments varies greatly between, for example, welfare payments and unemployment insurance (see Table 1-20). When examining the effect of redistributive programs on changes in the distribution of income from 1971 to 1975 in Quebec, Morgan (1980) concluded that:

Family allowances and unemployment insurance have never been programmes that redistributed much income, and the redistributive power has not increased. Any changes in the size of these programmes, without accompanying changes in their distribution, will at best do little to change income distribution. At worst, such increases in size will make the income distribution less equal. On the other hand, OAS/GIS and social assistance are markedly redistributive. More spending on these programmes, or similar ones, will get more income to those most in need, without changes in the structure of programmes. (p. 160)

**TABLE 1-9 Income Distribution, 1971–81, Canada,
Pre- and Post-Transfers Income, Gini Coeffecients**

	Income before Transfers		Total Money Income (Including Transfers)	
	1971	1981	1971	1981
All Units	0.447	0.439	0.400	0.377
Families	0.386	0.375	0.343	0.320
Unattached Individuals	0.558	0.529	0.465	0.405

Source: Statistics Canada, *Income After Tax Distribution by Size in Canada, 1981*, cat. no. 13-210, Text Table IX, p. 22.

Note: A decrease in a Gini coefficient indicates an increase in equality.

The share of transfer payments received by the first quintile did not increase from 1971 to 1981.²⁶ However, changes in the taxation of

transfer payments between 1971 and 1981, consisting of taxation of unemployment insurance benefits (1972) and of family allowances (1978), should have increased the targetting of net benefits.

These considerations suggest that data problems are unlikely to explain the stability of distribution of annual income in Canada from 1951 to 1981. There were a number of changes in demographic factors and in labour force participation rates; each of these should have changed the distribution of income, but these factors taken together seem to have cancelled out. As to transfers, their redistributive effect varies with the design and the relative importance of each program in total transfers. As Table 1-9 shows, transfers do redistribute income.

INTERNATIONAL COMPARISONS OF THE DISTRIBUTION OF INCOME

This section is an attempt to contrast the distribution of money income in Canada with the distribution in other industrialized nations. The small amount of literature on international comparisons of income distribution is replete with warnings about the difficulties of carrying out such comparisons (Sawyer, 1976; Stark, 1977). These difficulties are the result of differences in the type of units surveyed (different definitions of families), in the coverage of a given type of unit (for example, because tax data are used rather than survey data), and in the definition of income.

Sawyer (1976) concluded that income equality could be compared in 12 OECD countries; Stark (1977) concluded that comparisons of income equality could be made for consumer units in three countries and for individuals in five countries.²⁷ The results of these studies are presented in Table 1-10. The three sets of results in the table all indicate that “Canada appears to rank approximately mid-way” (Osberg, 1981, p. 24) in terms of the inequality of the distribution of income. Furthermore, this finding still held in 1979, the last year for which comparable data are available. The Gini coefficients of the United Kingdom, Canada, and the United States were 0.375, 0.387, and 0.400, respectively.²⁸ Thus, “overall inequality of income . . . is . . . greatest in the United States and least in the United Kingdom, with Canada in between” (Gunderson, 1983, pp. 85–87). The differences, however, are quite small and perhaps insignificant.

Poverty

Poverty is a value-laden concept. Hence, it is appropriate to begin by considering how poverty should be measured before discussing the extent of poverty over the 1961–81 period, both for all Canadians and for those belonging to two groups where the incidence of poverty is higher, the elderly and families headed by women.²⁹

There are two approaches to measuring poverty.³⁰ The needs, or

TABLE 1-10 Gini Coefficients, Pre-tax Income, for Economic Families and for Individuals, Canada and Some Other Industrialized Countries

Country	OECD Study			Royal Commission Study		
	Economic families			Individuals		
	Year	Rank	Gini	Year	Rank	Gini
Canada	1969	5	0.382	1975	2	0.379
Australia	1966-67	10	0.313	—	—	—
France	1970	1	0.416	—	—	—
Federal Republic of Germany	1973	3	0.396	—	—	—
Japan	1969	9	0.335	—	—	0
Netherlands	1967	4	0.385	—	—	—
Norway	1970	6	0.354	—	—	—
Sweden	1972	7	0.346	—	—	—
United Kingdom	1973	8	0.344	1975	3	0.355
United States	1972	2	0.404	1975	1	0.423
				1974	3	0.472
				1973-74	2	0.479
				—	—	—
				—	—	—
				—	—	—
				—	—	—
				—	—	—
				1974	5	0.434
				1972-73	4	0.462
				1974	1	0.501

Sources: Malcolm Sawyer, "Income Distribution in OECD Countries," *OECD Economic Outlook Occasional Studies* (Paris: OECD, 1976), Tables 3 (dates) and 5 (Gini); Thomas Stark, *The Distribution of Income in Eight Countries*, Background Paper No. 4, Royal Commission on the Distribution of Income and Wealth (London: H.M.S.O. 1977), Table 137 (economic families), and Table 132 (individuals).

Notes: The ranking is from the country with the least to the most equal income distribution.

budget, approach establishes the income needed to meet the needs (food, shelter, etc.) of a family of a given size. In Canada, provincial welfare administrations use such an approach, at least implicitly, as do other bodies such as the Social Planning Council of Metropolitan Toronto. The divergence method defines poverty relative to the consumption or income of society as a whole. The Canadian Council on Social Development (CCSD) defines a family of three individuals as poor if its income is less than 50 percent of the average income of Canadian families of any size. The poverty lines for families of other sizes are calculated using a scaling formula (one-half for a family of one, five-sixths for a family of two, seven-sixths for a family of four, etc.). Statistics Canada defines as low income a family spending more than a given percentage of its income on food, shelter, and clothing. That percentage, originally set at 70.0 percent in 1961, became 62.0 percent in 1973 and 58.5 percent in 1981.³¹ Table 1-11 presents the poverty lines for one person and for a family of four.

The choice of a poverty line is crucial in determining the incidence and depth of poverty. For example, 24.7 percent of families and 41.2 percent of unattached individuals were below the poverty line in 1979 according to CCSD data. By contrast, 13.1 percent of families and 40.3 percent of unattached individuals were below Statistics Canada's low income cut-off in the same year.³²

Unfortunately, there is no consensus on what the poverty line should be. One argument in favour of the social assistance levels is that they reflect the implicit opinion of a majority of voters. Yet survey data indicate that Canadians think that the amount of money going to the poor should increase.³³ At the other end of the scale are the CCSD poverty lines. In this paper, we use Statistics Canada's low income cut-offs, the most commonly used measure, to examine the extent and distribution of poverty. This indicator of poverty is used here to estimate whether the extent of poverty has increased or decreased over time in Canada. Table 1-12 indicates that the extent of poverty declined between 1961 and 1981, particularly for families. More recent data for 1983 show that the 1981-82 recession was accompanied by an increase in poverty, but that it is still less widespread than in 1971.³⁴

The incidence of poverty declined in Canada from 1961 to 1981, but income distribution remained almost unchanged. Is this a paradox? No, because the measure of poverty used is based on the share of income allocated to the consumption of necessities. Therefore when real income increases, the incidence of poverty could well decrease even if the distribution of income remains unchanged. On the other hand, if the difference between the average income of the poor and the poverty line widens, the incidence of poverty could remain unchanged while the share of income going to the first quintile decreases.

TABLE 1-11 Low Income Lines in Canada, 1983

Family Size	Social Assistance ^a	Statistics Canada ^b	CCSD
One member	3,956	9,538	8,625
Four members	9,860	19,397	20,125

Source: Canadian Council on Social Development, Task Force on the Definition and Measurement of Poverty in Canada, *Not Enough: The Meaning and Measurement of Poverty in Canada* (Ottawa: CCSD, 1984), p. 25.

a. Includes family allowances and child benefits.

b. Urban families.

TABLE 1-12 Incidence of Low Incomes, Canada, 1961-81

Year	Families (1)	Unattached Individuals (2)	Persons (3)
		(percentage)	
1961	27.9	49.2	n.a.
1971	18.3	43.1	20.0
1981	12.0	37.8	14.7

Sources: For 1961, columns (1) and (2), see Statistics Canada, *Statistics on Low Income in Canada, 1967*, cat. no. 13-536, p. 16. The 1961 non-farm results were multiplied by the (1965 non-farm results/1965 non-institutional results) ratio to make them comparable to 1971 and 1981 results. For 1971 and 1981, see Statistics Canada, *Income Distributions by Size in Canada, 1982*, cat. no. 13-207, Table 85, p. 162.

Notes: The 1961 results are calculated using the 1961 Statistics Canada cut-offs; 1971 results use the 1969 cut-offs; and 1981 results use the 1978 cut-offs. These cut-offs reflect the share of expenditures going to necessities in that year. Their absolute value is indexed annually to inflation so that they remain as current as possible.

n.a. Not available.

Who are the poor in Canada? Table 1-13 provides answers to this question for 1981 in terms of three key characteristics: age, schooling, and family structure.

- Being of pensionable age or almost (55 to 64) increases the likelihood of poverty, especially for women. The high percentage of poor unattached individuals under 24 probably reflects both the temporary low income of post-secondary students and the difficulties of school leavers in finding employment.
- The better educated an individual is, the less likely he or she is to be poor. This result is in agreement with the net effects of schooling on earnings, as reported in the next section on Table 1-18.
- Single-parent families headed by women are more than three times as likely to be poor as any other type of family. This fact may be owing to non-participation of the female head in the labour force, because of either parental duties or lack of skills, or owing to non-payment of child or spouse support payments. Results not shown here also indicate that the probability of poverty increases with the number of children.

**TABLE 1-13 Incidence of Low Income, Canada, 1981,
by Age, Schooling and Family Structure**

Characteristics	Families	Individuals
	(percentage)	
Age		
Less than 24	22.7	38.4
25-34	12.6	18.2
35-44	10.7	22.4
45-54	9.0	30.3
55-64	10.5	40.9
65 plus	14.5	58.6
Schooling ^a		
0-8 years	18.9	62.9
High school	11.6	33.3
Post-secondary, no diploma	8.4	34.2
Post-secondary with diploma	7.0	22.8
University degree	4.7	17.3
Family Structure		
Married couple	8.3	—
Married couple, child	8.9	—
Married couple, children and/or relatives	8.0	—
Single-parent family, male head	13.8	—
Single-parent family, female head	42.8	—

Source: Canadian Council on Social Development, Task Force on the Definition and Measurement of Poverty in Canada, *Not Enough: The Meaning and Measurement of Poverty in Canada* (Ottawa: CCSD, 1984), p. 23.

a. Reports age and schooling of the heads of families.

The extent of poverty among the elderly is often felt to be surprising, given the existence of transfer programs linked to age, such as Old Age Security (OAS), or to age and income deficiency, such as the Guaranteed Income Supplement (GIS) and the Canada or Quebec Pension Plan (CPP or QPP).³⁵ Table 1-14 indicates that poverty among the elderly, particularly among families, declined between 1961 and 1981. This may be explained in part by the introduction of the GIS in 1966 and by the increase in pensions payable under the CPP or QPP in the 1970s. Table 1-15 indicates that unattached individuals are much more likely to be poor than families, that this probability increases with age, and that women who are unattached or heads of families are more likely to be poor than their male counterparts. Given the level of public pensions, poverty among the elderly is associated with the absence of adequate private income, whether from investments or from a private pension. This association is strongest for elderly women, often widows who did not work outside the home and who receive inadequate or no survivors' benefits from private pensions.

Table 1-13 also indicates that single-parent families headed by women are much more likely than other families to have incomes below the poverty

TABLE 1-14 Incidence of Low Incomes, Canadians Aged 65 and over, 1961-81

	Families (Age of Head)	Unattached Individuals
	(percentage)	
1961	43.9	69.4
1971	34.8	68.4
1981	14.5	58.6

Sources: For 1961, Statistics Canada, *Incomes of Canadians*, cat. no. 99-544 (1) Table 8.2, p. 194; (2) Table 8.1, p. 187. For 1971, 1981, Statistics Canada, *Income Distribution by Size in Canada, 1981*, cat. no. 13-207, Table 85, pp. 162-63.

TABLE 1-15 Incidence of Low Income, for Elderly Families and Unattached Individuals, by Age and Sex of Head, 1981

	All Ages	65-69	70 +
	(percentage)		
Families			
Male head	12.9	14.3	11.9
Female head	24.7	27.1	23.5
All families	14.5	15.6	13.6
Unattached individuals			
Male	48.4	40.5	51.4
Female	62.2	53.9	64.9
All individuals	58.6	50.2	61.6

Source: National Council on Welfare, *Sixty-five and Older* (Ottawa: The Council, 1984), Table 14. The data used are from the Survey of Consumer Finances for 1981.

line. Is this situation different from that in the 1970s? Because of data limitations, this question is more difficult to answer than the same question asked about the elderly. Data for 1971-81 clearly show a much greater decrease in the incidence of poverty among husband-wife families and families headed by men than among families headed by women. In 1971, 16.7 percent of husband-wife families and 24.5 percent of families headed by men were poor. By 1981, the corresponding figures were 9.6 percent and 15.7 percent. By contrast, the percentage of female-headed families that were poor declined only from 43.2 per cent to 40.4 percent.³⁶

Finally, we should note that a significant proportion of the poor are working poor. In 1978, 44 percent were working poor (Ross, 1981, p. 13). In that year, 50.2 percent of poor heads of families and 31.5 percent of poor unattached individuals worked for 50 to 52 weeks, while 83.0 percent of non-poor heads of families and 72.5 percent of non-poor unattached individuals worked for 50 to 52 weeks. Thus, both unemployment spells and low-wage income contribute to the poverty of the working poor.

The Earnings of Canadians

There are two reasons why the earnings of Canadians must be examined in greater detail than other types of income. First, earnings are the major source of income, as is shown in Table 1-4. Second, differences in earnings linked to various personal characteristics are often debated in the public arena. Two current examples are the differences in earnings between men and women and between those with more and fewer years of schooling. This section examines the level of earnings of specific groups of Canadians in 1981. Multivariate analysis is used to ascertain the net effect of specific individual characteristics (sex, schooling, etc.) on 1981 earnings. Original results are used because most of the studies reviewed here used 1971 census data and are thus somewhat dated.

THE LEVEL OF EARNINGS

Table 1-16 shows the earnings of Canadians with earned income. The exclusion of non-earners leads us to neglect differences in participation rates, particularly between women and men.³⁷ The table suggests the following observations about how earnings vary with earners' personal characteristics.

- Women earn on average about 52 percent of what men earn. This percentage varies by age group, schooling, and marital status.
- Earnings increase with age, reach a maximum when earners are between age 35 and 54, and then decline.
- Earnings of both men and women increase with years of schooling above a minimum threshold, especially when schooling is associated with a diploma or degree. Individuals with some university schooling are particularly well rewarded.
- Mother tongue seems to have little if any effect on earnings.
- Married men earn more than single men or men in the category "other" (widowed, separated, or divorced). By contrast, women in the category "other" earn more than single or married women.
- Earnings increase with the size of the place of residence, possibly reflecting differences in the cost of living.
- When compared to Ontario, earners from the Atlantic provinces earn less, those from Quebec earn about the same, those from Manitoba and Saskatchewan less, and those from Alberta and British Columbia more.

Although the descriptive results are interesting, they are not very useful in explaining the effects of each characteristic on the earnings of Canadians, because these characteristics are closely linked and their effects are hard to disentangle. For example, the relatively high earnings of individuals with less than a grade nine education may be explained by their age. Multivariate analysis is needed to obtain the effect of each characteristic by itself (the net as opposed to the gross effects reported in Table 1-16).

TABLE 1-16 Earnings of Canadians with Earned Income, 1981,

Characteristics	All (1)	RRC ^a (2)	Men (3)	Women (5)	RRC ^a (4)	Women/ Men (7)
	\$	%	\$	\$	%	
Sex						
Male	18,107	R	—	—	—	0.530
Female	9,686	-47	—	—	—	
Age						
15-24	7,592	R	8,643	6,418	R	0.743
25-34	15,912	+110	19,618	11,612	+72	0.564
35-44	18,760	+147	23,832	11,806	+84	0.495
45-54	18,399	+142	23,307	10,825	+69	0.465
55-64	16,767	+121	19,979	10,764	+68	0.539
65 +	8,402	+11	9,653	5,581	-13	0.578
Schooling						
None or elementary	12,720	R	15,083	7,546	R	0.500
High school, 9-10 years	12,043	-5	15,192	6,888	-9	0.453
High school, 11 years	11,633	-9	14,965	7,633	+1	0.510
High school, 12 years	14,054	+10	18,163	9,657	+28	0.532
High school, 13 years	14,598	+15	18,256	10,597	+40	0.581
Post-secondary, no diploma	13,131	+3	16,106	9,316	+24	0.578
Post-secondary, diploma	16,213	+27	21,032	11,505	+53	0.547
University ^b	24,106	+90	28,669	16,389	+117	0.572
Mother tongue						
English	14,663	R	18,490	9,689	R	0.524
French	14,085	-4	17,186	9,558	-1	0.556
Other	14,762	+1	18,031	9,924	+2	0.550

Characteristics	All (1)	RRC ^a (2)	Men (3)	RRC ^a (4)	Women (5)	RRC ^a (6)	Women/ Men (7)
	\$	%	\$	%	\$	%	
Marital Status							
Single	9,243	R	9,949	R	8,310	R	0.835
Married	16,965	+83	21,556	+117	10,006	+20	0.464
Other	14,284	+55	18,920	+90	11,781	+42	0.623
Place of Residence							
Rural	12,762	R	15,698	R	7,867	R	0.501
Urban 30,000	13,609	+7	17,265	+10	8,338	+6	0.483
Urban 30,000-99,999	14,126	+11	18,100	+15	8,894	+13	0.491
Urban 100,000 +	15,372	+20	19,152	+22	10,592	+35	0.553
Province of Residence							
Ontario	14,627	R	18,362	R	9,811	R	0.534
Newfoundland	12,094	-17	14,952	-19	7,578	-23	0.507
Prince Edward Island	9,779	-33	12,038	-34	6,798	-31	0.565
Nova Scotia	11,537	-21	14,314	-22	7,731	-21	0.540
New Brunswick	11,414	-22	14,339	-22	7,252	-26	0.506
Quebec	14,213	-3	17,149	-7	9,891	+1	0.577
Manitoba	12,877	-12	16,575	-10	8,295	-16	0.501
Saskatchewan	14,099	-1	17,965	-2	8,559	-13	0.476
Alberta	16,275	+11	20,532	+12	10,552	+8	0.514
British Columbia	16,203	+11	20,519	+12	10,431	+6	0.508

Source: Statistics Canada (1982), Survey of Consumer Finances, micro data tape. Individuals aged 15 and over, with and without income, 1981. Calculations done by the author.

- a. RRC: Ratio to Reference Category. One reference category is arbitrarily chosen for each set of characteristics. The income of individuals belonging to other subgroups is divided by its income, and that ratio minus one becomes the RRC. Reference categories are marked with an R and are the first of each set of characteristics.
- b. "University" refers to individuals with some university education or holders of a university degree.

THE DETERMINANTS OF EARNINGS

In theory, a great number of individual or employment characteristics may affect a person's earnings. A partial list would include intelligence, physical strength, physical attractiveness, years of schooling, quality of schooling, work habits, specialized knowledge (apprenticeship), motivation, knowledge of one or several languages, occupation, and industry worked in.³⁸ In practice, the number of characteristics studied by economists is much more limited, reflecting the limitations of the available data. The effect of omitted characteristics on earnings may be captured in part by included characteristics, depending on the links between the two sets of characteristics. For example, intelligence is generally omitted but years of schooling, which is generally included, will capture at least part of the effect of intelligence on earnings since intelligence and years of schooling are often closely linked.

Two major approaches to earnings determination can be distinguished. The personal characteristics approach explains earnings in terms of characteristics in some sense inherent to the individual such as age, schooling, and sex. The personal employment characteristics approach uses both employment characteristics, such as occupation and sector of activity, and personal characteristics to explain earnings. There are advantages to both approaches but in general the net effect of personal characteristics on earnings is lower when employment characteristics are also used. The reason is that personal characteristics have an effect not only on earnings but also on employment characteristics. For example, schooling affects both earnings and the type of occupation held. If occupation is omitted, the net effect of schooling on earnings is captured by the schooling variable; if included, the net effect of schooling on earnings is captured both by the schooling variable and by the occupation variable.

The ordinary least squares method is used here to determine the net effect on earnings of sex, experience, schooling, mother tongue, marital status, place of residence, province of residence, hours worked, and occupation.³⁹ Appendix B provides a short description of this statistical technique.

This overview uses four functional relations, summarized in Table 1-17, to explain earnings. The net effect of each characteristic on earnings for all Canadians is presented in Table 1-18. These results can thus be compared to those in Table 1-16. The effect of each characteristic on earnings is examined in turn.⁴⁰

Differences in earnings linked to sex are of particular interest not only because they appear to be large but mainly because they are linked to an innate characteristic. Table 1-18 indicates that when differences in schooling, experience or mother tongue are controlled for (column 1), women's earnings are still approximately 50 percent lower than men's. Even controlling for the place and region of residence (column 2) does not change

TABLE 1-17 Characteristics Used in Functional Relations

Functional Relation	Sex	Mother Tongue	Schooling	Experience (Age)	Marital Status	Place of Residence	Province of Residence	Work Effort	Occupation
Personal Characteristics									
(1)	X	X	X	X					
(2)	X	X	X	X	X	X	X		
Employment Characteristics									
(3)	X	X	X	X	X	X	X	X	
(4)	X	X	X	X	X	X	X	X	X

**TABLE 1-18 Effect of Characteristics on Earnings,
All Canadians, 1981**

Characteristic	Personal Characteristics Approach		Employment Characteristics Approach	
	(1)	(2)	(3)	(4)
Sex (with respect to male)				
Female	- 52.3	- 53.0	- 38.0	- 34.0
Experience				
10 to 11 years	+ 6.2	+ 5.0	+ 2.8	+ 2.5
Number of years with positive returns to experience	30.0	29.0	29.0	30.0
Schooling (with respect to none or primary)				
9-10 years	0	0	0	0
11 years	+ 23.2	+ 15.9	+ 13.1	+ 13.0
12 years	+ 74.5	+ 58.7	+ 36.7	+ 33.9
13 years	+ 63.7	+ 53.6	+ 35.1	+ 31.0
Post-secondary, no diploma	+ 76.3	+ 59.8	+ 44.8	+ 37.7
Post-secondary, diploma	+ 112.5	+ 90.1	+ 58.6	+ 45.8
University degree	+ 179.5	+ 144.5	+ 91.3	+ 73.3
Mother Tongue (with respect to English)				
French	0	0	9.7	+ 8.3
Other	0	0	0	0
Marital Status (with respect to single)				
Married	—	+ 44.5	+ 28.8	+ 25.4
Other (widowed, divorced, separated)	—	+ 38.6	+ 22.4	+ 21.4
Place of Residence (with respect to rural)				
Urban 100,000 + (inhabitants)	—	+ 29.5	+ 24.0	+ 16.2
Urban 30,000-99,999	—	+ 18.0	+ 14.3	+ 8.7
Urban 30,000	—	+ 11.9	+ 10.0	0
Province of Residence (with respect to Ontario)				
Newfoundland	—	0	0	0
Prince Edward Island	—	0	0	0
Nova Scotia	—	0	0	0
New Brunswick	—	0	0	0
Quebec	—	0	0	0
Manitoba	—	0	0	0
Saskatchewan	—	0	0	0
Alberta	—	+ 23.5	+ 18.5	+ 19.1
British Columbia	—	+ 9.9	+ 18.2	+ 18.0

TABLE 1-18 (cont'd.)

Characteristic	Personal Characteristics Approach		Employment Characteristics Approach	
	(1)	(2)	(3)	(4)
Hours Worked in Year				
Effect of one extra hour worked on earnings	—	—	+ 0.06	+ 0.06

Source: Significant regression coefficients, Table 1-B1.

Notes: 0 indicates a non-significant coefficient.

— indicates a characteristic not included in the equation.

The level of significance and the exact coding of the variables are discussed in Appendix B.

The net effect of a variable measures the effect of the given level of a characteristic compared to another. For example, from column (1), one learns that individuals with 11 years of schooling earn — all else equal — 23.2 percent more than those with no schooling or only primary schooling.

the effect of sex on earnings. However, controlling for the number of hours worked (column 3) reduces the effect of sex on earnings, and when the type of occupation (column 4) is also considered the effect is reduced even more. These results indicate that women are more likely to be in less rewarding occupations than men.

Our results are in agreement with those of Gunderson and Reed (1983) and Gunderson (1983), who concluded from a review of the empirical evidence that occupational segregation explains an important part of the difference in earnings between men and women. The effect of occupation would be even greater if a finer occupational breakdown was used (for example, if the health/medicine category were divided into doctors, nurses, etc.).

Table 1-16 shows that earnings increase with age, reach a maximum, and then decrease. Table 1-18 indicates that going from ten years of experience to eleven increases earnings between 2.5 percent and 6.2 percent and that earnings peak between 29 and 30 years of experience.⁴¹ Table 1-16 indicates that earnings reach a maximum when earners are 40 to 50 years old. Such a result is in agreement with the finding that earnings peak after approximately 30 years of experience. A comparison of the net effect of experience reported in columns (2) and (3) in Table 1-16 also indicates that more experienced workers work more hours.

Table 1-16 also shows that an individual who attended university earned 90 percent more than a person with an elementary education or less. Table 1-18 indicates that this percentage underestimates the effect of schooling on earnings, because in general the older an earner the less his or her schooling. Since there is a positive link between age and earnings until about age 50, the true effect of schooling on earnings is hidden. When

employment characteristics are included to explain earnings (column 3 and 4 of Table 1-18), the effect of schooling on earnings is lessened because part of the effect of schooling on earnings occurs through the effect of schooling on the number of hours worked (that is, the probability of employment) and on the type of occupation.

In general, the results of Tables 1-16 and 1-18 indicate that mother tongue plays a rather limited role in explaining earnings. Both tables indicate that family responsibilities are linked to higher earnings. This result is common in this kind of analysis and is often explained by the greater stability of these individuals. The gross effects on earnings of not being single shown in Table 1-16 are higher than the effects shown in Table 1-18. This difference can be explained by the fact that single people are younger on average and thus less experienced than those who are not single.

Both Tables 1-16 and 1-18 indicate that the larger the city an earner lives in, the higher his or her earnings. This reflects in part the higher cost of living in such cities and thus the higher nominal wages. It may also reflect the greater number of employment opportunities associated with a larger labour market.

Table 1-16 indicates that residents of provinces east of Alberta earn less than residents of Ontario, while residents of Alberta and British Columbia earn more. Table 1-18 indicates that earnings are similar in all provinces except Alberta and British Columbia, where they are higher than elsewhere. This result indicates that earners in the Atlantic provinces, who are otherwise similar to earners in central Canada do not earn less than those in central Canada. An extra hour of work increases earnings but only by 0.06 percent (columns 3 and 4, Table 1-18).

An important general conclusion can be drawn from this section. It is misleading to use differences between the mean earnings of various subgroups of Canadians, grouped according to a given characteristic (for example, age, sex, or schooling), to measure the effect of that characteristic on earnings. Therefore, to estimate the effect of a characteristic on earnings, one should use multivariate analysis since it controls for the effect of all other characteristics present in the analysis. For example, one cannot know a priori whether the gross effect (Table 1-16) underestimates or overestimates the net effect (Table 1-18) of a characteristic.

Economic Security Programs in Canada

This second part of our overview presents some of the federal and provincial programs that have as their aim the transfer of economic resources to individuals. The redistributive effects of regulation or of transfers to established or new firms in terms of employment or earnings are not examined here. Furthermore, only some transfer programs to individuals are included, because it would not be feasible to examine them all and because the programs selected account for the bulk of cash and in-kind transfers.

The first section of this part of the overview presents various indicators of the size and, when possible, the evolution of six sets of programs, which are examined in detail in the following six sections. These sets of programs are:

- public policy toward the out-of-school non-elderly (the unemployment insurance program, welfare programs, income supplementation programs, and workers' compensation programs);
- public policy toward the elderly (the main cash transfer programs — OAS, GIS, CPP or QPP — and two tax expenditure programs — pension deduction and age exemption);
- public policy toward families with children (family allowances, the child tax credit, the deductions for dependent children and child care expenses, and programs for daycare);
- public policy toward health (programs for hospital and medical services);
- public policy toward housing (the main federal programs used to deliver housing to low income individuals); and
- public policy toward schooling (the primary and secondary school systems and the postsecondary school system).⁴²

The length and content of these policy sections vary according to the contents of the papers on these issues found in this volume. The overview describes the relevant programs, and discusses expenditure-side efficiency and distributional considerations and policy issues. The revenue-side efficiency and distributional issues are discussed only where there is a clear link between a program and source of funds. However, the Commission study by Blomqvist (1985) and the paper by Fortin in this volume emphasize that raising tax revenues involves costs in terms of economic efficiency in addition to the revenues raised. This cost, or excess burden, is the result of decisions by economic agents to modify their behaviour because of taxes. For example, people may reduce their supply of labour because of income taxes, thus leading to lost output in the economy. There is no agreement on the exact value of the excess burden of taxation in Canada.

The Importance and Evolution of Transfers

This section begins with a fairly detailed picture of the situation in the six policy areas, and then traces the evolution of some of these programs from 1951 to 1981.⁴³ Table 1-19 indicates the resources given over to the transfers to individuals under the programs studied here. In 1981, \$60,628 million were paid out in transfers to individuals, and \$1,965 million are estimated to have been foregone in tax revenues. Transfers therefore total \$62,593 million or 18.9 percent of GNP. Excluding education expenditures, which can be regarded as human capital investment expenditures rather than transfers, total transfers in 1981 were \$42,137 million or 12.7 percent of GNP.

TABLE 1-19 Expenditures on Selected Social Programs, Canada, 1981

Social Program	Federal Expenditures		Provincial Expenditures (3)	Total Expenditures (net of transfers) (4)
	Total (1)	Net of Transfers to Provinces (2)		
				(\$000)
I Out-of-School Non-elderly				
Unemployment insurance	5,560,376	5,560,376	—	5,560,376
Working poor income supplement	—	—	n.a.	n.a.
Social assistance	2,650,240	312,759	3,699,491	3,982,250
Workers' compensation boards	—	—	1,627,256	1,627,256
Total	8,210,616	5,873,135	5,296,747	11,169,882
II Elderly				
Old Age Security	6,164,253	6,104,253	—	6,164,253
Guaranteed income supplement	2,223,595	2,223,595	—	2,223,595
CPP/QPP (column 4 only)	—	—	—	2,070,464
Age exemption ^a	345,000	345,000	172,500	517,500
Pension reduction ^a	140,000	140,000	70,000	210,000
Total	8,872,848	8,872,848	242,500	11,858,812

Social Program	Federal Expenditures		Provincial Expenditures (3)	Total Expenditures (net of transfers) (4)
	Total (1)	Net of Transfers to Provinces (2)		
				(\$000)
III Families with Children				
Family allowances	2,019,520	2,019,520	190,286	2,209,806
Child tax credit	1,068,991	1,068,991	—	1,068,991
Child deduction ^a	760,000	760,000	380,000	1,140,000
Child care expense deduction ^a	65,000	65,000	32,500	97,500
Daycare services	61,500	61,500	127,733	189,233
Total	3,975,011	3,975,011	730,519	4,705,530
IV Health				
Hospital services	2,668,426	4,523	11,238,077	11,242,600
Medical services	1,652,689	17,124	5,567,206	5,584,330
Total	4,321,115	21,647	16,805,283	16,826,930
V Housing				
Public housing	320,000	—	275,000	595,000
Non-profit and co-op	74,000	—	15,000	89,000
Rent supplements	46,000	—	30,000	76,000
Total	440,000	—	320,000	760,000
VI Education				
Primary/secondary	291,546	268,417	14,872,786	15,141,203
Post-secondary	1,726,792	80,711	5,237,664	5,318,375
Total	2,018,338	349,128	20,110,450	20,459,578

TABLE 1-19 (concluded)

Social Program	Federal Expenditures		Total Expenditures (net of transfers) (4)
	Total (1)	Net of Transfers to Provinces (2)	Provincial Expenditures (3)
		(\$000)	
Tax expenditures	1,310,000	—	655,000
Welfare expenditures:			
(1 + 2 + 3 + 4 tax expenditures excluded)	19,748,475	18,720,994	5,614,760
Grand Total	27,837,928	19,087,769	43,505,493
			62,593,262

Sources: I Unemployment Insurance: Statistics Canada, *Federal Government Finance* 1981 (FGF), cat. no. 68-211, Table 2, line 31, Working Poor Income Supplement. Social Assistance: FGF, Table 2, line 36 and Statistics Canada, *Provincial Government Finances 1981* (PGF) cat. no. 68-207, Table 2, line 32. Workmen's Compensation Board: Benefit payments taken from *Employment Injuries and Occupational Illnesses 1972-1981* (Ottawa: Labour Canada, 1984), Table 1.5.

II OAS/GIS: FGF, Table 2, line 29 broken down in OAS and GIS expenditures by using data from Statistics Canada, *Old Age Security, Guaranteed Income Supplement and Spouses's Allowance*, 1982, cat. no. 86-509, Table 6, p. 69. CPP/QPP: Statistics Canada, *Canada and Quebec Pension Plans*, cat. no. 86-507, Table 6. Only amounts paid out as pensions are included. Widow, orphan, death, and disability benefits are excluded. Age Exemption: Unpublished data from Department of Finance; see below. Pension Deduction: Unpublished data, Department of Finance; see below.

III Family Allowances: FGF, Table 2, line 34 and PGF Table 2, line 31. Child Deduction: Unpublished data, Department of Finance; see below. Child Care Expenses Deduction: Unpublished data, Department of Finance, see below. Daycare Services: Data was available on CAP payments from the federal government for 1981-82 and 1982-83 (courtesy of D. Moodie, Department of National Health and Welfare). Data was available for provincial expenditures for 1982-83 from the National Day-Care Information Centre (Fact Sheet, 1982). The ratio of 1981-82/1982-83 CAP payments was used to estimate 1981-82 provincial expenditures.

IV Hospital Services: FGF, Table 2, line 22, and PGF, Table 2, line 22. Medical Services: FGF, Table 2, line 23, and PGF, Table 2, line 23. V Public, Non-Profit and Co-op, Rent Supplement: "Federal and Provincial Government Expenditures to Assist and Promote Rental Housing in Canada, 1976-1982" (Toronto: Arthur Andersen and Co., 1984), p. 4.

VI Primary/Secondary Education: FGF, Table 2, line 41; PGF, Table 6. Total minus transfers to other levels of governments and Statistics Canada, *Local Government Finance*, cat. no. 68-203, Table 3, line 26. Post-Secondary: FGF, Table 2, line 42, and PGF, Table 2, line 41. Note: Federal tax expenditures for 1981 are not published. We therefore wish to express our thanks to S. Poddar and B. Wurts, Tax Policy and Legislation Branch, Department of Finance, for making them available to us. Provincial expenditures are calculated as 50 percent of federal expenditures. Because the child tax credit is a refundable tax credit and thus a money transfer paid out through the tax system, we do not consider it a tax expenditure.

a. Tax expenditures.

b. Column (4) is the sum of columns (2) and (3), net of transfers to provinces and local governments.

Health programs, which are targetted to serve the greatest share of Canada's population, involve the greatest expenditures, as might be expected. Housing programs involve the lowest expenditures but this does not mean that housing needs are neglected, since part of cash transfers is used to purchase housing services. Tax expenditure programs are used for transfers to the elderly and to families with children, the two cases where recipients are identified by demographic characteristics.

Who benefits from the cash transfer programs reported in Table 1-19? Table 1-20 shows the distribution of benefits before income taxes by income quintile and by being below or above low income cut-off.⁴⁴ Some programs direct a greater share of their benefits to lower income units than do others. For example, social assistance programs intended to ensure a minimum income to all Canadians, appear to benefit lower income units. On the other hand, unemployment insurance, which is intended to replace employment income rather than to alleviate poverty, is not targetted at lower income units. Furthermore, the child tax credit provides more to

**TABLE 1-20 Distribution by Quintile and by Income Cut-off
of Various Transfer Payments, Canada, 1981, All Units**

Transfer Payment	Quintile ^a					Low-Income Cut-off ^b	
	First (lowest)	Second	Third	Fourth	Fifth (highest)	Below	Above
Unemployment Insurance ^c	11.6	24.6	23.2	21.3	19.3	14.1	85.9
Social Assistance ^d	61.0	22.8	7.6	4.8	4.8	67.5	32.5
OAS/GIS ^e	41.0	32.4	11.5	7.7	7.4	33.4	66.6
CPP/QPP ^f	23.3	35.4	17.9	13.1	10.3	18.8	81.2
Family Allowance ^g	7.8	14.6	22.7	28.1	26.8	15.8	84.2
Child Tax Credit ^h	11.6	21.5	34.0	25.1	7.8	22.9	77.1
Other Transfers ⁱ	1.7	26.7	23.3	15.5	14.8	22.2	77.8
All Transfers ^j	29.1	27.4	17.2	14.1	12.2	28.6	71.4

Source: Economic Family 1981 Incomes, Statistics Canada (1982), Survey of Consumer Finances micro data tape. Calculation by the author.

Note: Statistics Canada warns that the coverage of Social Assistance and Other Transfers is lower than in other cases.

- a. Income quintiles were computed using total money income and published cut-offs for 1981.
- b. 1978 low income cut-off updated to 1981.
- c. Includes sickness, maternity, retraining and retirement benefits. Not corrected for 30% tax-back rate applicable in some cases.
- d. Received from provincial and municipal governments. Includes assistance to needy mothers with dependent children, to the blind and disabled and income supplement programs.
- e. OAS, GIS and Spouse's Allowance.
- f. Retirement pensions, survivors' benefits (widows, orphans) and disability pensions.
- g. Federal and provincial (Quebec, Alberta) allowances. Reported by the person claiming the child as a tax deduction.
- h. To be reported by the recipient of family allowances (usually the female parent).
- i. Includes veterans' pensions (veterans, widows, dependents) and other war allowances, worker's compensation, training allowances, various provincial grants and tax credits.
- j. The sum of the seven transfers listed above.

lower income families than the family allowances — as it is designed to — even without taking into account the taxable status of the allowances and the non-taxable status of the credit.

It would be interesting to measure with precision the evolution of transfer expenditures in Canada. This task is made difficult, however, by two factors. First, there is a discontinuity in 1970 in the expenditure data produced by Statistics Canada.⁴⁵ Second and more important, there are changes over time in the mix of programs used to reach a given type of beneficiary. For example, the introduction of a refundable child tax credit in 1978 was accompanied by a reduction in family allowances. Since expenditures associated with the child tax credit do not appear as cash transfers, while family allowances do, this change in delivery mechanisms leads to changes in recorded expenditures. Hence although Table 1-21 presents data on the evolution of welfare, health, and education expenditures from 1951 to 1981, these numbers should be regarded as indicators of trends rather than as precise measures of expenditures.

TABLE 1-21 Welfare, Health, and Education Expenditures, Canada, 1951-81

	1951	1961	1971	1981
	(\$000)			
Welfare Expenditures				
Unemployment insurance (1)	75,996	493,971	890,544	5,560,376
Social Assistance (2)	17,531	346,382	1,289,051	3,982,250
Old Age Security (3)	176,809	592,413	1,627,219	6,164,253
Guaranteed Income Supplement (4)	0	122,628	280,005	2,223,595
CPP/QPP (5)	0	0	51,262	2,070,464
Family allowances (6)	309,465	506,192	557,878	2,209,806
Welfare Total (7)	662,000	1,741,000	6,967,784	23,625,720
Health Expenditures (8)	256,000	1,032,000	4,842,708	16,826,930
Education expenditures (9)	498,000	1,820,000	6,537,979	20,459,578
Total of (7) + (8) + (9) above (10)	1,416,000	4,593,000	18,348,471	60,912,268
Percentage of GNP (11)	6.5	11.6	19.4	18.4

Sources: For 1951, 1961 and 1971, the main source is: 1951 and 1961 Statistics Canada, *Historical Statistics Canada*, (1): Series C-248; (2): Sum of Series C-352, C-378, C-404, C-547; (3): Series C-300 x 1.33 for 1951, Series C-79 for 1961; (4): Series C-326; (5): N.A. Series; (6): Series C-29; (7): Series H-151; (8): Series H-150; (9): Series H-152. 1971: (1): same as 1951-1961; (2): Sum of C-144, C-352, C-368, C-409, C-430, C-456, C-469, C-495 and C-547; (3): Series C-79; (4): Series C-105; (5): Series C-209; (6); Series C-27. In addition data for items (7), (8) and (9) for 1971 come from Statistics Canada, *Consolidated Government Finance 1971*, cat. no. 68-202, Table 2, lines 35, 26 and 40, respectively. 1981: Taken from Table 20 of this paper. GNP is from Department of Finance, *Economic Review*, 1983, Table 3.

Note: Column (7), Welfare Total, does not correspond to the sum of columns (1) to (6) since it includes not only these programs but also programs such as Veterans' Allowances.

That said, Table 1-21 clearly shows that social expenditures in Canada increased both in dollars and as a share of GNP between 1951 and 1981. Part of this increase could be due to a greater number of beneficiaries becoming eligible for a given program and the remainder to an increase in the benefit payments associated with a given program. Table 1-22 traces the value of the benefits associated with various programs over time.

Public Policy toward the Out-of-School Non-Elderly

UNEMPLOYMENT INSURANCE PROGRAMS

Unemployment insurance was introduced in 1940 as an insurance program. Between 1940 and 1971, its coverage of Canadian workers was expanded in several steps and its benefit structure modified. In 1971, a major reform was undertaken that led to an increase in benefits, a decrease in eligibility requirements, and almost universal coverage of the labour force. Since 1976, some of the provisions of the 1971 reform have been modified.

The main characteristics of the program are the following.⁴⁶ Coverage of paid workers is almost complete. Excluded are those working less than 15 hours weekly or earning less than 20 percent of the maximum weekly insurable earning (\$315). The entrance requirement varies from 10 weeks of insurable employment in a region with unemployment over 9 percent to 14 weeks in a region with less than 6 percent unemployment. The maximum benefit period is 50 weeks unless the claimant participated in special programs. The number of weeks of benefits increases with the number of insurable weeks of unemployment and also depends on the regional unemployment rate. The benefit period is thus the sum of earned benefits and additional regional benefits. The maximum weekly benefit is 60 percent of insurable earnings (\$181). Individuals with a net income that equals or exceeds 1.5 times annual insurable earnings repay up to 30 percent of their benefits.⁴⁷

The effects of unemployment insurance on economic efficiency predicted by economic theory are examined by Cousineau in the paper in this volume. He identifies effects on length of unemployment, job search, labour mobility and the fluctuations in employment, and examines the empirical evidence for Canada and the United States. Cousineau finds that when the benefits/wages ratio is about one-half, an increase of 0.1 in that ratio (from 0.5 to 0.6, for example) increases the length of unemployment by one week. The intensity of job search (hours per week) is probably reduced by increased unemployment insurance benefits but the number of weeks of search increases. It is not possible, however, to conclude that this lengthening of search activity produces better paying jobs or more stable jobs for past claimants. Measures that lead to greater supervision of a claimant's search activity reduce the length of unemployment. Unemployment insurance has reduced migration from the Maritimes to the rest of

TABLE 1-22 Maximum Monthly Benefit Payment, Unemployment Insurance, Welfare, Old Age Programs, Family Allowances and Monthly Income, Canada, 1950-83

Program	1950	1951	1960	1961	1971	1973	1981	1983
Unemployment Insurance								
(1) Pre-1971 reform								
Without dependents	69.43	69.43	115.71	115.71	197.14	—	—	—
With dependents	90.00	90.00	154.29	154.29	248.57	—	—	—
(2) Post-1971 Reform								
Social Welfare Programs								
(3) Canadian average (family of four)	50.92	—	87.25	—	—	307.83	—	684.79
Old Age Programs								
(4) Pre Old Age Security	40.00	40.00	—	—	—	—	—	—
(5) Old Age Security	—	—	55.00	55.00	80.00	100.00	214.86	251.12
(6) Guaranteed Income Supplement	—	—	—	—	55.00	70.14	215.72	252.10
(7) Canada (Quebec) Pension Plan	—	—	—	—	55.21	80.21	274.31	345.19
Family Allowances								
(8) Federal allowances outside Quebec and Alberta								
Less than 6 years	5.00	5.00	6.00	6.00	6.00	12.00	23.96	28.52
6-9 years	6.00	6.00	6.00	6.00	6.00	12.00	23.96	28.52
10-12 years	7.00	7.00	8.00	8.00	8.00	12.00	23.96	28.52
13-15 years	8.00	8.00	8.00	8.00	8.00	12.00	23.96	28.52
(9) Monthly average per capita income		82.00		121.58	240.92		803.00	

TABLE 1-22 (concluded)

Sources:	(1)	Canadian Tax Foundation, <i>The National Finances 1971-1972</i> , Table 8-15, p. 149.
	(2)	J. Kesselman, <i>Financing Canadian Unemployment Insurance</i> (Toronto: Canadian Tax Foundation, 1984), Table 4.9, p. 54.
	(3)	Table 1-23.
	(4)	Canadian Tax Foundation, <i>The National Finances 1982-1983</i> , p. 129.
	(5),(6)	Ibid, Table 7.1, p. 130.
	(7)	Ibid, Table 7.7, p. 141.
	(8)	Canadian Tax Foundation: <i>The National Finances, 1972-1973</i> , p. 124 for 1950-73 rate; <i>1980-1981</i> , p. 126 for 1981, and <i>1982-1983</i> , p. 133 for 1983.
	(9)	Table 1-2, line 3, this paper.
Notes:	Lines 1 and 2:	we assumed 22 days per month.
	Lines 5 and 6:	1973, 1/4/73 rate, 1981, 1/7/81 rate, 1983, 1/1/83 rate.
	Line 8,	9 years and under: 1973, October 1 rate. Before October 1 the 1971 rate applied.

Canada. The absence of experience-rated premiums for firms explains in part the number of temporary layoffs.⁴⁸

Cousineau reports the results of Cloutier (1978), who found that in 1975 the first quintile of individuals received 8.1 percent of unemployment insurance benefits paid out and the other four each received more than 20 percent. These data are similar to those of Table 1-20, indicating clearly that the unemployment insurance program does not target its benefits to the poorest in society. This conclusion is not surprising, since poverty is often associated with age, physical disability, or family responsibilities that prevent people from working and thus from drawing unemployment insurance. Further reason why the program is not targetted at income redistribution toward the poor is that it does not take into account family income or assets before paying out benefits.⁴⁹

Two sets of policy issues are apparent in this area. The first set emerges if one accepts that the unemployed, once they have actively searched for work, are free to dispose as they please of their time and that although policies should try to reduce the abuses of the system, they should not aim at employing all individuals. Hence Cousineau offers three suggestions. He suggests that regionally differentiated benefits be eliminated to create a better spatial distribution of labour across Canada. He recommends introducing experience-rated premiums to reduce the size of industries with low stability in employment, such as seasonal industries. Finally, he believes that setting the benefits ratio at 50 percent of insurable earnings and increasing the number of work weeks required for a given level of benefits would increase the cost of unemployment to the individual and thus possibly reduce the cost of the UI program as a whole. Cousineau recommends that the moneys saved by such reforms be used to facilitate labour market adjustments and the creation of long-term jobs, and to protect truly destitute workers better.

The second set of policy issues emerges if one views these reforms as insufficient because of the production losses and demoralization of workers associated with unemployment. Readers with this view may be attracted by the proposals put forward by Kesselman in his study in this volume. Kesselman proposes the replacement of personal and spousal exemptions, the deduction of dependent children, the old age income tax exemption, family allowances, the refundable child tax credit, OAS and GIS by a system of universal demogrants (per capita grants of a given amount that may vary with age). These demogrants may or may not be taxable. He suggests that the unemployment insurance program be restructured to reduce incentives for workers with unstable employment histories, for example by raising entrance requirements and eliminating regionally extended benefits. He calls for the creation of new employment programs available to workers with inadequate family income. These programs would include subsidized employment in private firms paying the market wage, public employment with below-market wages, and retraining programs.

The proposal by Kesselman has several attractive features. One advantage is that the proposed partial reform of the tax/transfer system leads to a better targetting of social programs. A second advantage, of greater relevance here, is that idle time of the unemployed would be used in activities that appear more socially productive than those carried out previously. The advantages and difficulties of this scheme are discussed in detail by Kesselman.

GENERAL WELFARE

This overview does not provide a history of welfare programs in Canada either since their inception or even since World War II, because these programs come under provincial jurisdiction and a description would require more time and space than can be allotted here.⁵⁰ It should be noted, however, that since 1950 the accessibility of these programs to individuals in need has been increased and the eligibility requirements (years of residence in a province, British or Canadian citizenship, etc.) have been relaxed.

Aside from the shared-cost pension program introduced by the federal government in 1926, the first federal interventions in this field were in the 1930s (pensions for blind persons aged 40 and over). The introduction in 1966 of the Canada Assistance Plan (CAP), which provides for a 50/50 sharing of general welfare and of specific welfare services such as daycare, marks the start of the system now prevailing in Canada.⁵¹ Under CAP, provinces deliver welfare payments and services, determine the needs of applicants and thus the amount of welfare payments received in various circumstances. Unlike payments under UI, OAS or GIS, these amounts vary considerably from one province to the next, as indicated in Table 1-23. However, the spread between the highest and lowest amount of assistance has decreased from 152 percent in 1951 to 84 percent in 1983.

In his paper in this volume, Fortin points out that the marginal tax rate for people on welfare is very high, at least in Quebec and Ontario. This fact is of greater importance than in the case of the unemployment insurance (UI) program, under which benefits cease once the eligibility period is over and people pay a small marginal tax rate on any employment income. Welfare payments do not cease after one year, and the incentive to look for work therefore depends more strongly on the marginal tax rate than in the case of the UI program. People faced with a 100 percent tax rate (a one dollar reduction in benefits for each one dollar earned) and work-related expenses may be reluctant to seek employment.

The use of means, income, and assets tests ensures that welfare payments are received by those in need. The principal policy issue is the disincentive to work. Since welfare recipients face extremely high marginal tax rates, a reduction in the marginal tax rate on the earnings of employable recipients would encourage them to search for work.⁵²

TABLE 1-23 Annual Amounts of Welfare, Canada, 1951-83

Province	One Adult, One Child				Two Adults, Two Children			
	1950 (1)	1960 (2)	1973 (3)	1983 (4)	1950 ^b (5)	1960 ^b (6)	1973 (7)	1983 (8)
Newfoundland	300	1,044	—	6,504	420	1,464	2,940	7,752
Prince Edward Island	300	540	—	7,476	360	600	3,552	10,380
Nova Scotia	—	480	—	7,140	—	540	3,300	9,984
New Brunswick	330	420	—	6,420	420	540	3,408	6,900
Quebec	420	720	—	6,516	492	960	3,510	8,808
Ontario	600	1,440	—	6,792	840	1,632	4,032	8,004
Manitoba	576	1,512	—	6,480	906	2,064	3,864	11,184
Saskatchewan	400	720	—	8,820	540	1,080	3,972	12,720
Alberta	540	840	—	8,400	720	1,080	4,158	12,432
British Columbia	600	—	—	7,680	804	—	4,200	10,440
Canada ^b	440	857	—	7,223	611	1,047	3,694	8,217

Sources: 1950 *Canada Year Book*, 1951, pp. 242-43.

1960 *Canada Year Book*, 1961, pp. 278-79.

1973 *Working Paper on Social Security in Canada*, 2d ed. (Ottawa: Department of National Health and Welfare Canada, 1973), Table 9, p. 54.

1983 "Welfare Benefits: An Interprovincial Comparison," *Social Infopac*. 2 (October 1983).

- a. The data reported in this table required the use of a number of assumptions and may not be strictly comparable through time; in our opinion, however, they do reflect the overall trend in the period.
- b. Assumptions used for 1950 and 1960 calculations: In all cases data in the supplementary column were not used. In all cases two-adult families include the disabled father at home when available. In Newfoundland for 1960 we assumed in column (2) an expenditure of \$37 on food, of \$30 on rent (urban areas) and of \$10 on fuel. In column (6) we added \$10 a month for food (second child less than 16). In Quebec for 1950 we used data for cities with a population of 5,000 or more. In Manitoba for 1950 and 1960 we assumed a second child (column 5 and 6) aged 7-11. In Manitoba for 1960 we assumed food, clothing and personal needs expenses of \$64, shelter expenses of \$55. In British Columbia for 1950 we assumed that recipients were renters.
- c. Unweighted average of reported rates.

In addition to differences in welfare payments, there are differences between provinces in the access to various free services in such areas as health, daycare, and legal aid. Table 1-24 shows variations in the provision of three types of health benefits — dental services, prescription drugs, and hearing and visual aids. Dental services are provided free of charge to welfare recipients in New Brunswick, Quebec, and British Columbia and to the elderly in Alberta but are not subsidized in other provinces. Prescription drugs are available free of charge or at a reduced rate to welfare recipients in all provinces except Alberta. Most provinces do not provide hearing and visual aids free of charge to welfare recipients.

What are these services worth to welfare recipients? The data are not available to enable us to answer this question for Canada as a whole. However, data for Quebec indicate that in 1981 the average annual value of dental services received by social welfare recipients benefitting from those services was \$146.12 and the average value of prescription drug ser-

vices (pharmacist's fee and value of the drug) was \$88.21, for a total of \$234.33.⁵³ Since monthly welfare payments to a single adult were \$121 for recipients under age 30, and \$331 for older recipients, health benefits represent an important in-kind transfer.⁵⁴

PROGRAMS FOR THE WORKING POOR⁵⁵

Three provinces have programs designed to supplement the income of the working poor: Saskatchewan (since 1979), Quebec (since 1979), and Manitoba (since 1981). All three programs are aimed at the poor; the specific aim of the Quebec program is to ensure that the income of the working poor is higher than that of welfare recipients in similar family circumstances. Each province reduces the income supplement if income exceeds a given level (a reduction of one dollar for two dollars of income in Saskatchewan, one for three in Quebec, and one for four in Manitoba).

WORKER'S COMPENSATION BOARDS⁵⁶

Workers' Compensation Boards, introduced as early as 1915 in Ontario and Nova Scotia and as late as 1951 in Newfoundland, exist in all Canadian provinces.⁵⁷ The coverage of these programs and the benefits payable vary from province to province. In 1979, the maximum weekly amount payable varied from \$173 in Prince Edward Island and Nova Scotia to \$288 in Saskatchewan. Funding of these boards is through a payroll tax that varies across employers along with the risk associated with the work performed.

There are two major policy issues to be considered. First, are the various firms and sectors of the economy correctly rated for risk or are there undetected health hazards in some firms or sectors that should call for higher premiums? Efficiency demands that risk be correctly evaluated, but it may be difficult to make such evaluations when information is scarce or costly to obtain. Second, are the workers employed in any given year paying the correct amount of premiums so that there are no actuarial surpluses or deficits?⁵⁸ If the premiums are insufficient, another generation of workers will have to pay for them through higher premiums or lower benefits. This policy issue is therefore one of intergenerational equity.

Public Policy toward the Elderly

There are six major programs of support for the elderly in Canada.⁵⁹

Old Age Security (OAS) The first public pensions were introduced in Canada in 1927 as a cost-shared program (50/50) between the federal and provincial governments. The federal government assumed sole responsibility for pensions in 1952, and the age of eligibility became 65 in 1970. In

TABLE 1-24 Some Supplementary Health Benefits and Income Limits, 1981

	Dental Services		Prescription Drugs		Aid	
	Children	Adults	Elderly Persons (65+)	Others	Hearing	Visual
Newfoundland	U ^a (0-12)	—	Elderly persons eligible for GIS	W	L	L
Prince Edward Island	W (4-6) ^b	—	U	W ^c	—	—
Nova Scotia	U (0-14)	—	U	Cancer drugs ^d	—	—
New Brunswick	W	W	U	W	—	W
Quebec	U (0-15)	W	U	W	W or aged 35 years	Aged 35 years
Ontario	—	—	U	W	—	—
Manitoba	—	—	U ^e	U ^e , W ^e	—	—
Saskatchewan	U (4-16)	—	U	U ^f , W ^f	U	—
Alberta	—	Aged 65 and over	—	—	Aged 65 and over	Aged 65 and over
British Columbia	U (0-14) ^g	W ^g or Aged 65 and over	U ^h	U ^h , W ^h	—	—

TABLE 1-24 (cont'd.)

Sources: Department of National Health and Welfare, *Medical Care Annual Report, 1980-1981*; Department of National Health and Welfare, Health Insurance Division, "The Federal Medical Care Program, Provincial Medical Care Insurance Plans; January 1982."

Notes: The following symbols denote the level of availability. L — low income individuals or families including welfare recipients; U — all individuals or families, no income limit; W: individuals or families receiving welfare.

- a. \$2.00 user fee per visit.
- b. \$4.00 registration fee per year per child (maximum per family: \$12.00).
- c. Some user fees.
- d. Income less than \$9,000.
- e. 80% of the cost of drugs over a \$75 annual deductible (\$50 for elderly persons) is reimbursed. Welfare recipients are fully reimbursed.
- f. A dispensing fee must be paid except by welfare recipients.
- g. Children and elderly persons pay 50% of costs up to \$1,400, 100% afterwards: welfare recipients pay any amount above \$700.
- h. 80% of the costs of drugs above a \$100 annual deductible are reimbursed but elderly persons and welfare recipients are fully reimbursed.

1981, the maximum monthly payment under OAS was \$219.86 (as of July 1). Payments under OAS are taxable.

Guaranteed Income Supplement (GIS) This program was introduced with the CPP/QPP in 1967. It provides non-taxable geared-to-income benefits. Maximum benefits as of July 1, 1981, were \$215.72.⁶⁰ For single, widowed, or divorced pensioners, GIS is reduced by \$1 for every \$2 of income over OAS.⁶¹

Canada Pension Plan/Quebec Pension Plan (CPP/QPP) This program, introduced in 1966, is funded by a payroll tax of 3.6 percent of pensionable earnings (1.8 percent paid by the employee, 1.8 percent by the employer). By contrast OAS and GIS are funded from general revenues. Benefits depend on earners' contributions (years and amount of contribution) and may reach 25 percent of pensionable earnings. In December 1981, the maximum monthly pension was \$274.31.

Age exemption Individuals 65 and over can claim an exemption (\$1,980 in 1981) to reduce their taxable income. Because of the progressive nature of the income tax system, this exemption is worth more to those with high income than to others.

Pension deduction Individuals can deduct their pension income (up to \$1,000 in 1981) to reduce their taxable income. Like the age exemption, this deduction is worth more to those with high income than to those with low income.

Provincial income supplementation programs These programs are described in Éthier's paper in this volume.

Éthier examines two effects of public pension plans as they affect economic efficiency. First, she reports that the evidence on savings behaviour is contradictory and concludes that it is difficult to say whether or not public pension plans affect savings. Second, there is little Canadian evidence on the effect of pensions on the supply of labour. However, it is probably the case that — as in the United States — ill health and pension benefits help to explain early retirement decisions.

The design of GIS ensures that public pensions in Canada provide a minimum income to elderly Canadians and thus redistribute income toward them. OAS, tax expenditures, and CPP/QPP are not aimed at redistributing income toward the elderly poor.

Pensions have been the subject of an intense debate in Canada since 1975. This debate arises because, by 1995 at the latest, the 3.6 percent contribution rate to CPP/QPP should no longer be sufficient to permit the

payment of pensions without drawing on the plan's assets. The debate has expanded, however, to cover issues such as the appropriate level of retirement income, public pensions for homemakers and the vesting, portability, and indexing of private pensions. The debate can be summarized by three questions. What should be the level of pensions? Who should pay for pensions? Where should the pension savings be held?

The desired level of retirement income varies from individual to individual but probably increases with pre-retirement income because of patterns of consumption. The issue here, however, is the minimum level of retirement income that should be available to all. In particular, the pension available to homemakers (women who have seldom or never worked outside the home) is often regarded as too small because these women could not contribute to CPP/QPP or to private, employment-related pension plans. The choice of the minimum retirement income is a choice that society must make, but different methods of financing pension plans have different economic effects.

In a society where each individual or family must provide for its own retirement income and there are no public transfers whatsoever, pensions would be fully paid out of savings or intra-family transfers. However, in Canada there are public pensions, and who should pay for them is a major issue. One possibility is that members of each generation save for the pensions of their generation but that intra-generational transfers are effected. Thus, the poor who do not save enough are helped by high income individuals. Another possibility is the pensions of members of one generation who are too poor to provide for their own retirement income are paid in part or in full by high income individuals of the next generation.

Should the pension boards that collect and invest these moneys be public or private? Public boards can cover the entire population more easily and at lower costs, but their investment strategies may not maximize the returns on savings. However, the use of private pensions raises two issues. First, the non-monetary benefits (pre-retirement options, pensions for survivors, etc.) available to individuals working in different companies may not be the same even though the contributions by employer and employee do not vary. These differences can be considered a reflection of the wishes of the contributors and hence could be appropriate. However, they could also reflect inappropriate responses by management.

Second, and more important in our opinion, employees' mobility between firms may decrease because of vesting requirements which state that employees must work for a minimum number of years before they can retain the employer's contribution to a pension plan when changing employment. Since vesting requirements tend to increase the time that employees will remain with a firm, a reduction in these requirements could induce firms to reduce the training they provide to their employees.

*Public Policy Toward Families with Children*⁶²

There are five components to the public support system for families with children.

Family allowances, established in 1948, are cash transfers paid to a parent (usually the mother) of each Canadian child under 18. This transfer is taxable income for the parent claiming the exemption for dependent children. The after-tax value of the allowance decreases both as a percentage of income and in dollars with the parent's income because the Canadian income tax system is progressive.⁶³ Hence family allowances are progressive. As of January 1, 1981, the monthly federal allowance was \$23.98 per child except in Quebec and Alberta.⁶⁴ In Quebec, the allowance varied from \$14.37 for the first child to \$55.16 for the fourth child and subsequent children under age 12.⁶⁵ In Alberta, the allowance varied from \$18.20 for children age 6 and under to \$33.60 for children age 16 and 17.

The child tax credit is a refundable tax credit paid in full or used to reduce the taxes payable by a family with an income below a given threshold.⁶⁶ The value of the credit decreases both as a percentage of income and in dollars as the income of the family rises above the threshold. Hence the credit is progressive. In 1981, the program was worth \$261 per child to a family with an income below the threshold.

The exemption for dependent children is a tax expenditure that allows taxpayers to reduce their taxable income by a given amount. Introduced in 1918, the exemption is almost as old as income tax, introduced in 1917. The after-tax value of the exemption increases in dollars with taxable income. Hence it is regressive. In 1981, this exemption was worth \$590 when calculating the federal⁶⁷ and provincial income taxes, with the exception of Quebec.⁶⁸

The deduction for child care expenses is a tax expenditure introduced in 1972. The deduction reduces the cost of child care of families in which the mother works outside the home. The value of the deduction increases with income, and the program is therefore regressive. In 1981, a working mother could claim \$1,000 per child to a maximum of \$4,000 per family.

Funds to help users of daycare centres are provided by all provinces in Canada. The two main types of programs are subsidies to daycare centres and subsidies to low income users. Subsidies to centres are paid irrespective of the income of the parents. In Saskatchewan, Manitoba, and Quebec, such subsidies are reserved for non-profit centres. Subsidies to low income users are designed to allow children from poor families to attend daycare centres at a lower cost to their parents. Being related to income, these programs are progressive.

No direct efficiency issues are associated with these tax and transfer programs. Subsidies to daycare centres and their users are often associated

with specific types of services. How services are delivered is examined below as a policy issue.

Family allowances, the child tax credit and the exemption for dependent children provide benefits whether or not a family has specific child care or daycare expenses. These programs are worth the most to middle income (\$10,000 to \$25,000) recipients. Low income recipients gain less because the exemption for dependent children is of little value to those in low tax brackets, while high earners gain less because the child tax credit diminishes in value with their income.

The incidence of the two programs targetted to child care users differs by income group. The deduction for child care expenses is worth more to high income individuals. Daycare assistance benefits vary depending on the province. In some provinces, parents may have reduced or no access to subsidized daycare services as their income increases.

Three policy issues can be identified in this area. What effect do these policies have on the birth rate? How should family benefits be distributed? How much in resources should go to daycare, and how should they be distributed?

There seems to have been little public debate in Canada about the effect on the birth rate of the public support system for families with children. This lack of debate may be due to Canadians' viewing the birth rate as the result of private decisions which should not be influenced by the state.

The distribution of transfers to families with children has become more progressive over time than transfers to the elderly. The first program introduced, the exemption for dependent children, was regressive. Family allowances, the second program, became progressive when they were made taxable. The third program, the child tax credit, was progressive from its inception. Hence the targetting of support for children to the neediest families has been steadily increased. If the amount of transfers remains unchanged, should this support be targetted even more than it is now? If poverty in childhood has effects on children that make them less productive members of society when they reach adulthood (for example, because of ill health), the costs and the benefits of alleviating their poverty should be considered.

The issue of daycare raises two questions. How much should be paid and to whom?⁶⁹ Answering the first question requires setting the limit between family and societal responsibility for providing for children. That limit has varied through time, most recently in Canada in the provision of free kindergartens by school boards in some provinces. Should society provide free daycare as it now provides free schooling to children regardless of family income? Since there is little if any evidence that daycare is preferable to parental care in educational or psychological terms for children under age 5, there are no externalities that can justify its provision by governments.⁷⁰ However, universal free daycare might be an appro-

priate measure to encourage women to have career choices as much as possible like men's in terms of both schooling and employment opportunities.⁷¹

Once the extent of availability of daycare has been determined, the mode of distribution must be chosen. In Canada, the subsidization of daycare (but not tax deductions for child care) is in part restricted to specific types of care because provincial regulations often limit subsidies to daycare centres, often non-profit ones. Why should there be such a preference for institutional care in the distribution of subsidies? One answer might be that subsidized centres provided better care than other kinds of child care services before subsidies began and thus were deemed to merit a subsidy. There does not appear, however, to be evidence that institutional daycare provides better for the needs of an infant than care in either the child's home or another private home, whether by a relative or a non-relative. Hence, child care support should probably be delivered through an allowance paid to the mother.⁷² The allowance could be set at a given amount or percentage of the cost of child care and be redeemable in services from institutions or individuals. If governments worry about appropriate standards of care, minimum standards could be set and the parents allowed to choose the type of care.

Public Policy Toward Health

The delivery of health services is carried out by a vast array of health professionals in various settings. Most of these services are provided free to users and are financed in part by two federal programs.

The Hospital Insurance and Diagnostic Services program covers the costs of accommodation (ward level), meals, nursing services, drugs, supplies, and facilities in general rehabilitation and long-term-care hospitals. The Medical Care program covers the costs of the services of physicians, both generalists and specialists, without any exclusions for particular diseases. Before 1977, costs of these programs were shared 50/50 by the provinces and the federal government. Since 1977, both of these programs have been funded under the Established Programs Financing Act with a combination of equalized tax points and cash transfers.⁷³ In 1983, three provinces had no user charges for hospital services, three levied charges only on chronic care patients, and four levied charges of various types.⁷⁴ In some provinces, physicians may charge the patient more than the fee negotiated between the provincial medical association and the provincial government. In all provinces except Quebec (where extra billing is prohibited), a provincial board pays the amount set by the fee schedule either directly to the patient or to the physician, and the patient tops up the set fee.

In addition to hospital and physician services, provinces provide various services free to various groups. For example, dental services are offered in Newfoundland to children age 12 and under, in Prince Edward Island

to children age 4 to 16, in Nova Scotia to children age 15 and under, in Quebec to children age 16 and under, and in Saskatchewan to children age 5 to 16.⁷⁵

Health expenditures represented 7.3 percent of Canadian GNP in 1970, and 7.6 percent of GNP in 1981. Health expenditures have thus not increased greatly since 1970. Government health expenditures grew from 70 percent of health expenditures in 1972 to 75 percent in 1981. Government expenditures on health were 5.9 percent of Canadian GNP in 1981, as noted by Grenier in his paper in this volume.

There does not seem to be any evidence that the health delivery system in Canada is much more or less efficient than systems in other countries, such as the United States. This does not mean that the system could not be made more efficient in the long run. In 1974, the heaviest users of health services were children and the elderly. Furthermore, if the costs associated with pregnancy are attributed to the child rather than to the mother, there is little if any difference in health costs by sex.

Grenier reports the results of ten studies using seven different data sets and concludes that there is evidence that introducing universal hospital and medical care insurance in Canada has allowed low income people to receive a larger share of services. Looking at the use of specific services, Grenier concludes that in the case of physician services, public provision surely did not make the poor worse off, but that there is strong evidence that the poor use hospital services more than the wealthy. Since hospital services account for a larger share of total health expenditures than physicians' services, he concludes that health insurance has a progressive effect on income distribution.

Two sets of policy issues should be noted in the area of health. The first bears on current health services. Are all Canadians receiving the appropriate amount of health services? The second bears on future health services. What effect will an aging population have on the resources devoted to health in Canada?

Grenier points out that in 1975, Canada spent 7.1 percent of its GNP on health services, less than Germany (9.7 percent), the United States (8.4 percent) or France (8.1 percent), but more than the United Kingdom (5.6 percent). Some of this variation may be explained by differences in the demographic structure of the population, but such an argument does not explain much of the difference between Canada and the United States. Are we spending too little on health or is the United States spending too much? If there are queues for particular services in Canada, and this situation imposes a cost in suffering or in deteriorating health (lessened chance of recovery), we are spending too little. If doctors in the United States provide unnecessary medical services in order to maximize their income, the United States is spending too much. One way of determining what we should be spending may be to compare the health of Canadians with that of residents of other countries, but this comparison is difficult to make

because there is no single satisfactory indicator of good health. Data on two possible indicators, life expectancy and infant mortality, presented in Table 1-25 indicate that Canada compares relatively well with other industrialized countries.

TABLE 1-25 Life Expectancy and Infant Mortality in Canada and 10 Other Industrialized Countries, 1960 and 1981

	Life Expectancy ^a (years)				Infant Mortality (0–1 year) (deaths per thousand)			
	1960		1981		1960		1980	
	Level	Rank ^b	Level	Rank ^b	Level	Rank ^c	Level	Rank ^c
Canada	71	2	75	3	27	6	10	4
Australia	71	2	74	4	20	3	10	4
Austria	69	4	73	5	58	10	13	9
France	70	3	76	2	27	6	10	4
Federal Republic of Germany	70	3	73	5	34	9	13	9
Italy	69	4	74	4	44	11	14	11
Japan	68	5	77	1	30	8	7	1
Netherlands	73	1	76	2	18	2	8	3
Sweden	73	1	77	1	17	1	7	1
United Kingdom	71	2	74	4	23	4	12	7
United States	70	3	75	3	26	5	12	7

Source: *World Development Report, 1983* (New York: Oxford University Press for the World Bank, 1983), Table 23.

- a. Life expectancy at birth.
- b. From highest to lowest.
- c. From lowest to highest.

If there is excessive queuing in Canada, what options are open to policy makers? One possibility would be to increase the resources going to the health sector. A second option would be to attempt to shorten the queues by increasing the productivity of the health care system, reallocating resources, or hiring a different mix of resources (for example, fewer doctors and more nurses or paramedical staff). Queues could also be shortened by reducing the number of users through user fees. If the fees are high enough to reduce demand, they are likely to deter the poor more than the rich and will thus affect the distribution of health services. A variant of the user fee is an annual bill, geared to income, for consumption of health services over some given amount. The amount could vary by demographic characteristics of the individual or family, type of illness, or both.

However, the length of the queue may not be the issue. Rather, the issue may be the mechanisms for placement in the queue. The existing system depends in part on the nature of entry to the hospital (ranging from emergency by ambulance to elective walk-in) and in part on the patient's doctor. Alternative systems could use the individual's willingness to pay an immediacy premium or health prevention activities (maintaining appro-

priate weight, not smoking, etc.) to determine the amount of time spent in the queue.

Finally, the portability of health protection must be maintained. Although a significant proportion of American workers are covered by private insurance plans, these plans are often not portable between employers, thus creating an obstacle to the mobility of workers.⁷⁶

Grenier devotes two sections of his paper to future trends in health care costs. All demographic projections indicate that the proportion of the population age 65 and over will increase from 9.6 percent in 1981 to between 13 and 14.7 percent in 2001, in part because of the increase in life expectancy.⁷⁷ Life expectancy in 1951 was 68.33 years for men and 72.33 years for women. In 1981, it was 71.67 years for men and 78.65 for women.⁷⁸

Because the elderly are heavy users of health services (39 percent of hospital services in 1981), this demographic change could lead to a significant increase in health costs. However, this scenario may change if the productivity of the health sector could be improved, particularly in treating the elderly. Grenier reviews the literature and argues that the use of appropriate institutional facilities to care for the elderly could result in non-negligible savings. The use of home care could presumably reduce these costs even more.

Public Policy toward Housing

This section describes housing policies that have as their specific aims the provision of adequate housing to low income households, often the elderly. It does not describe government interventions that help households generally, such as policies to encourage the supply of mortgages (for example, direct loans to households and insurance of loans by Canada Mortgage and Housing Corporation and changes to the Bank Act in 1954 and 1967). It should be noted, however, that the practice of not taxing homeowners for the services obtained from owner-occupied homes and on capital gains on their principal residence is worth more to high income than to low income homeowners and is generally worth more to older than younger households because more older persons at any given income own their homes. Although provincial rent control authorities do not take a household's income into account, however, low income households may benefit more from provincial rent controls because they are more often renters than homeowners. However, as Miron and Cullingwood (1983) pointed out about Ontario in the 1970s, "rent review is a blunt instrument: for every needy household assisted, two households without an affordability problem are also assisted" (p. 51).

The supply of housing to low income households depends not only on programs in force at any particular time to providers of new low income housing but also on the stock of dwellings built under various programs

over time, some of which may have been discontinued. Any description of housing policy in Canada therefore requires more historical detail than a description of the UI program, for example. The following description is divided into three parts: policies on rental housing, policies on owned housing, and policies on housing allowances.⁷⁹

POLICIES ON RENTAL HOUSING

Four types of rental housing are available to the poor: public, entrepreneurial, non-profit, and cooperative housing. Public housing is provided by agencies of provincial or municipal governments. Such housing has also sometimes been funded under the entrepreneurial housing program (see below). However, most public housing has been funded under two programs. The first program which was instituted in 1949⁸⁰ — the federal provincial arrangements are given in section 40 of the National Housing Act (NHA) — provides for a 75/25 split of the capital cost of housing between the federal and provincial governments,⁸¹ for the use of geared-to-income rent scales, and for a 75/25 split of any resulting deficit.⁸² Since 1978, financing under that program has been available only to Newfoundland, Prince Edward Island, New Brunswick, and Saskatchewan.⁸³ The second program (sections 43 and 44 of the NHA), instituted in 1964, provided for a 90-percent loan to housing authorities for the use of geared-to-income rents (25 percent of income) and a 50/50 federal-provincial sharing of the resulting deficit. The second program had a higher take-up rate and its introduction was accompanied by the creation of provincial housing agencies. The program was terminated in 1978.

Entrepreneurial housing (section 15 of the NHA) is often referred to as the limited dividend program. The program was initially aimed at private entrepreneurs but was also used by limited dividend companies created specifically for that purpose by municipal governments and non-profit groups (see below). Initially, private entrepreneurs could receive Canada Mortgage and Housing Corporation (CMHC) loans⁸⁴ for 90 percent of the value of the project if they agreed to build projects with particular characteristics (number of units, number of bedrooms per unit, etc.) and to limit their returns on these projects to 5 percent. The program was used infrequently except in 1957–59 and 1967–70, when various parameters (project size, percentage of the project's value eligible for a loan, and maximum rate of return) were modified to attract borrowers. These changes were made mainly for purposes of macroeconomic stabilization. After 1969, the loan level was raised to 95 percent, the 5 percent return limit was relaxed, and the period of rent controls was limited to 15 years. The program was terminated in 1981.

The Rent Supplement Program (paragraph 44.(1)(a) of the NHA), in place since 1969, complements the limited dividend program. The sup-

plement program allows provinces to agree with landlords of private housing developments to make available a percentage of their units for subsidized rentals. The cost of the subsidies is divided 50/50 between the federal and provincial governments. The Assisted Rental Program, in force from 1975 to 1978, was also aimed at private landlords. It provided for ten years of interest-free loans of \$1,200 per unit to private developers who agreed to a predetermined rate of return on their project and to charge market rents, both of which were negotiated with CMHC. The loans were reduced by one-tenth per year. Under the terms of 1976 agreements, this program will end in 1995.

Non-profit housing was first administered along with the limited divided program. CMHC provided loans (90 percent of the value of the project) to bodies such as service clubs or church groups, which often used the loans to fund accommodations for the elderly.⁸⁵ Unlike programs for public housing, programs for non-profit housing receive no operating subsidies. From 1973 to 1978, non-profit groups could qualify for a program (subsections 15.(1) and 34.(18) of the NHA) which provided for a CMHC loan at 8 percent interest covering the full value of the project, plus a capital grant of up to a 10 percent. The program was terminated in 1978. Since then, non-profit groups have been expected to obtain an NHA-insured loan covering the full cost of the project from a financial institution. CMHC provides a subsidy equal to the difference between the loan's amortization cost (over 35 years) at a 2 percent interest rate and the amortization cost at the market rate of interest (subsection 56.(1) of the NHA). In addition, since 1975, rent subsidies (paragraph 44.(1)(b) of the NHA) have been available to low income tenants. These subsidies are equal to the difference between market rents and 25 percent of income, and the cost of the subsidies is split 50/50 between the federal and provincial governments.

Most cooperatives received little support from CMHC before 1973, when they were recognized for loan purposes.⁸⁶ Since 1978 cooperatives have been financed by the same program as that for non-profit groups.

POLICIES ON OWNED HOUSING

Before 1970, there was no program to support home ownership for low income households. Such support was provided from 1970 to 1973 under a \$200-million experimental program and since 1973 under the Assisted Home Ownership Program (AHOP). AHOP provided for an interest-reduced loan from CMHC until 1975 and from financial institutions thereafter. The program also provided for a direct grant so that families with one or more children in a given income range (\$4,000 to \$6,000 in 1970) could own their home without spending more than 25 percent of their gross income on payments. AHOP was terminated in 1978 but extended assistance was provided until June 1984. The Rural and Native Housing Program, implemented in 1974, also provides subsidies for home

ownership. The subsidy is equal to the difference between the sum of capital, interest, and tax costs and 25 percent of household income. The cost is shared 75/25 between the federal and provincial governments. Finally, the Residential Rehabilitation Assistance Program provides forgivable loans to low income homeowners so that they can rehabilitate their dwellings.⁸⁷

POLICES ON HOUSING ALLOWANCES

Housing allowances transfer a given amount of cash to households, to be used for housing purposes.⁸⁸ There is no national program, but four provinces — New Brunswick (since 1978), Quebec (Logirente since 1980), Manitoba (SAFER since 1980), and British Columbia (SAFER since 1977) — provide a cash supplement to renters age 65 and over (pensioners age 55 and over in Manitoba).⁸⁹ The supplement is a percentage (50 to 90 percent) of eligible rent (25 or 30 percent of income), with the percentage varying among provinces. These allowances allow their recipients to live in private rental accommodation but receive public support for housing.

According to CMHC, about 290,000 federally subsidized social housing units, less than 4.0 percent of the total housing stock, were subsidized under these programs in 1981. Of these subsidized units, 53.0 percent were public housing units, mainly (34.0 percent) subsidized under section 43 of the NHA; 6.5 percent were private units with rent supplements; 37.0 percent were non-profit or cooperative units; and 3.5 percent were subsidized under the Rural and Native Housing Program.

There is no evidence on the relative cost performance of public, entrepreneurial, and non-profit or cooperative housing in providing a given mix of quality and quantity of housing. Subsidies in most programs are linked to the housing unit. As a result, households in need of assisted housing may be unable to live in the location they prefer (given the price constraints they face) or unable to purchase the bundle of housing services they prefer.

Of the occupants of social housing, 48.8 percent belong to the first income quintile, 29.9 percent to the second, 13.2 percent to the third, 6.0 percent to the fourth, and 2.1 percent to the fifth. However, there are important differences among programs; 53.3 percent of residents of public housing belong to the first income quintile, as do 70.6 percent of the residents of rent-supplemented housing, 37.2 percent of residents of pre-1978 non-profit or cooperative housing, and 21.3 percent of residents of non-profit or cooperative housing funded in 1978 or later.⁹⁰ Hence there appears to be a trade-off between integrating low income recipients of housing subsidies into the community and the targetting that housing programs can achieve because cooperative housing is usually better integrated into the community than low income housing.

There are two policy issues in this area. The first is the choice of the

mechanism used to deliver housing benefit to low income households. The second is the use of rent controls.

Apart from the four provincial programs with housing allowances, which are targetted to fairly small groups of recipients, housing for low income households has been delivered by unit-linked subsidies. As a result, recipient's choice of type of units and location is restricted. Housing allowances would give recipients a greater choice of units yet ensure that recipients have adequate housing. Both private entrepreneurs and the non-profit or cooperative sector could compete to provide housing to recipients of housing allowances.

Rent controls have not been described here because they are not directly aimed at low income households. It is often argued that controls are needed to provide adequate housing for these households, but it should be noted that rent control helps all renters, including many who are reasonably well off, at the expense of landlords and others who may not be very affluent (Miron and Cullingwood, 1983, p. 5).

Public Policy toward Schooling

The programs discussed so far are all intended to provide cash or in-kind transfers to specific groups of individuals, most often low income individuals. This is not the aim of schooling programs, with the exception of the Canada/Quebec Student Loan Plan. Yet education is a very important determinant of earnings, which in turn make up about three-quarters of the income of Canadians. Since the quantity and quality of education available to individuals from early youth affects their future earnings, the educational system in Canada is reviewed briefly here, with emphasis on the features that have the greatest effect on the distribution of income.

The primary and secondary system is characterized by the absence of user fees,⁹¹ by the requirement of compulsory attendance over certain ages,⁹² by differences in the importance of local control across provinces,⁹³ and by the absence of a direct federal role.⁹⁴ There are several points to note about the distributive effects of schooling. First, the socio-economic background of parents affects their children's achievements in school. The poorer and the less educated the parents, the lower the achievement of the children.⁹⁵ The children of these parents may therefore lose interest in school, repeat grades, and even drop out of high school without a diploma once they are no longer required to attend school. School boards often try to prevent this pattern by making additional resources available in low income schools.

Second, the income of parents often influences where they live. Since the quality of education varies between the schools of a given board and among boards, lower income children may have access to education of lower quality.

The postsecondary education system in Canada is characterized by the

TABLE 1-26 Highest Education Attained by Education of Respondents' Father, Canadians Aged 17-64, 1982

Highest Education Attained by Respondent	Education of Respondent's Father					Completed University
	Elementary	Some Secondary	Completed Secondary	Some Post- Secondary	Completed College	
				(percentage)		
No College or University Education	80.3	69.2	53.6	49.0	47.3	31.7
College and University	19.7	30.7	46.2	50.9	52.6	68.4
College Education	12.6	17.9	21.2	27.0	26.8	23.1
University Education	7.1	12.8	25.0	23.9	25.8	45.3
Estimated Population (in thousands)	7,168	2,574	2,214	415	417	954

Source: Statistics Canada, survey data, provided by M. Barrados, Education Support Branch, Secretary of State.
Note: Totals may not add up to 100 percent due to rounding.

presence of low user fees, by federal funding of some teaching and research expenditures, and by a system of support for students based both on need (Canada/Quebec Student Loan Plan) and on merit (graduate fellowships). Students with a better socio-economic background, measured either by family income or parents' education, are much more likely pursue post-secondary studies than students with a poorer socio-economic background. In 1974, the attendance at postsecondary institutions of young adults (18–29) living with their parents varied from 17.5 percent for members of families with an income of less than \$5,000 to 55.4 percent for members of families with an income of \$25,000 and over.⁹⁶ Among those attending postsecondary institutions, “children of parents with incomes under \$10,000 are mostly enrolled at non-university institutions whereas their counterparts with richer parents (e.g., with \$25,000 and over income) were mostly attending university.”⁹⁷ Hence, income groups participate in postsecondary education at different rates. Data for 1982, reported in Table 1-26, show a similar link between individuals' education and that of their father.⁹⁸

The issues of the quality of schooling (course content) and of the delivery mechanism (public school boards or vouchers redeemable in public or private schools) are not covered here. The policy issue of concern is what the school system can do to provide children of low socio-economic background with the same chance of success, however measured, as children with better socio-economic backgrounds. There is no clear answer, because schools are not the sole agents that can help these children. The quality of nutrition and housing (private study space), and other family-related variables affect a child's performance in school. A transfer of financial resources may alleviate some needs in these areas and thus improve the performance of schoolchildren. It is probable, however, that the school system can play an important role in supplementing the learning environment in the child's home.

Conclusion

Our review of income distribution leads us to the following conclusions:

- The mean real income of Canadians has more than doubled since World War II and in 1980 compared quite favourably with the income of residents of other industrialized countries.
- The distribution of income remained relatively stable in Canada between 1951 and 1981. This may seem surprising but can be explained by the interplay of various forces, such as the increase in the number of unattached individuals and the number of working women.
- The incidence of poverty among all Canadians decreased between 1961 and 1981.
- Sex and schooling are important determinants of earnings in Canada.

Our review of economic security enables us to conclude the following:

- Important disincentives to work are inherent in income support programs such as unemployment insurance and welfare programs. These disincentives could be reduced if the marginal tax rate levied on the income earned by recipients of these programs were reduced.
- Constraints on the kinds of services that recipients of in-kind transfers can consume from child care and housing programs reduce economic efficiency. These efficiency losses could be reduced by using child care or housing allowances rather than linked subsidies.
- The effects of aging on the costs of pensions and health programs are important, but the effect on total public expenditures is mitigated by a decrease in the number of young dependents.
- Access to postsecondary schooling still varies according to socioeconomic background.

Appendix A

The Effect of Some Exclusions from the Survey of Consumer Finances on the Distribution of Income in Canada

Table 1A-1 presents information on the importance and qualitative effects of seven exclusions from the SCF on data relating to the distribution of income in Canada in 1980–81. Each exclusion is reviewed here in turn.⁹⁹

Yukon and Northwest Territories In 1980, the economic families and individuals residing in Yukon and the Northwest Territories received 0.27 percent of the income of SCF-surveyed Canadians. Twenty percent of Canadian economic families had an income higher than \$42,514 according to the SCF, whereas 26 percent of economic families in Yukon and the Northwest Territories had an income above \$40,000 in 1980 according to census data.

Residents of Indian Reserves According to our calculations, inhabitants of Indian reserves received 0.29 percent of the income of SCF-surveyed Canadians in 1980.

Inmates of Institutions Inmates of institutions can be assigned to two categories: those residing in institutions because of their health (often linked to their age) and those residing in institutions because of their criminal behaviour. Residents of health institutions are unlikely to be recipients of high incomes, either because they are retired or because they are unable to work. Given the employment opportunities open to them, residents of various types of prisons are not in receipt of high incomes. Including inmates in the SCF would probably increase the number of low

income individuals and slightly reduce the mean income of members of the first quintile.

Individuals and Families with Military Pay as Major Source of Income According to 1981 taxation and 1981 SCF data, the income of families with individuals whose main source of income was military pay accounted for 0.96 percent of the income of SCF-surveyed Canadians; 13.1 percent had an income higher than \$30,000, compared to 11.2 percent for all tax filers.

Capital Gains In 1981, realized capital gains (net of losses) in Canada were equal to \$4,740 million, according to taxation statistics.¹⁰⁰ This figure represents 2.06 percent of the income of SCF-surveyed Canadians. Individuals reporting capital gains are highly concentrated in the upper income brackets: 61.2 percent of capital gains are declared by individuals with an income above \$50,000.¹⁰¹

Owner-occupied Housing Income associated with owner-occupied houses represented 53 percent of all imputed income in 1981¹⁰² and 1.57 percent of the income of SCF-surveyed Canadians in 1981. Using data from 1976-77 to estimate the breakdown by income groups of the value of housing services, one finds that the fifth quintile receives about 35 percent of the value of imputed income, and the first quintile between 5 and 10 percent.¹⁰³

Fringe Benefits The definition of fringe benefits used here excludes benefits such as paid holidays or pay for sick leave already included in the income concept used by the SCF. Limiting ourselves to payments by employers either to public plans (Canada/Quebec Pension Plans, Unemployment Insurance, etc.) or to private plans (pension plans, life insurance, etc.), we find that in 1978 these benefits represented 9.4 percent of the gross payroll of Canadian industry. Since wages and salaries represented 75.5 percent of total income in 1981, fringe benefits represent 7.1 percent of SCF-surveyed income in 1981.¹⁰⁴ Wages and salaries are concentrated in the hands of higher income individuals¹⁰⁵ (48.3 percent of wages and salaries was earned by members of the fifth quintile in 1981), and fringe benefits tend to increase with the level of wages and salaries.¹⁰⁶

TABLE 1-A1 Importance and Quantitative Effect of Some Exclusions from the Survey of Consumer Finance, 1981

Exclusion Examined	Amount of Income Excluded	Year	Percentage of Aggregate Income	Qualitative Effects on Income Redistribution	
				Lowest Quintile	Highest Quintile
Individuals and Families					
Yukon and Northwest Territories residents (1)	530,355	1980	0.27	—	—
Indian reserves residents (2)	563,634	1980	0.29	+	—
Inmates of institutions (3)	—	—	—	+	—
Recipients of military pay (4)	2,213,864	1981	0.96	—	—
Types of Income					
Capital gains (5)	4,740,036	1981	2.07	—	+
Services from owner occupied house (6)	3,609,000	1981	1.57	+	—
Fringe benefits (7) (excluded from wages)	16,308,196	1981	7.10	—	+

TABLE 1-A1 (cont'd.)

Sources:	1980 Income	Statistics Canada, <i>Income Distribution by Size in Canada, 1980</i> , cat. no. 13-207, Table 33 (\$196,811,000,000).
	1981 Income	Statistics Canada, <i>Income Distribution by Size in Canada, 1981</i> , cat. no. 13-207, Table 49 (\$229,790,000,000).
Line 1	Source for the Northwest Territories, Statistics Canada, 1981 Census of Canada: <i>Economic Families in Private Household Income and Selected Characteristics</i> , cat. no. 92-937, Tables 6A and 6B.	
Line 2	The income of residents of Indian reserves is calculated using income data from Statistics Canada, census microfiches CDN81B11A and SDN81B39C, and using the fact that, in 1981, there were 566,570 natives in Canada including 292,700 status Indians, 162,600 of whom lived on reserves. Statistics Canada, Documentation Summary Tapes/Microfiches, Natives, pp. 77-78 (French version).	
Line 3	Although no data are available on income, note that in 1981 inmates of old age and nursing homes made up 0.735% of Canada's population (24,343,181) while inmates of prisons were 0.0007% of the population. Statistics Canada, 1981 Census of Canada: <i>Occupied Private Dwellings</i> , cat. no. 92-903, Tables 1 and 2.	
Line 4	Data on individuals with military income (\$1,640,630,000 in 1981) is taken from: Department of National Revenue, <i>Taxation Statistics, 1983</i> , Summary Table 3. We then assume that 75% of military personnel have spouses, making for 60,471 spouses and that their spouses have an average income of \$9,522, the average income of females in 1981. Statistics Canada, <i>Income Distributions by Size in Canada, 1981</i> , Table 54, p. 107. Note that the percent of married individuals goes up in rank ranging from 21.8% for privates with basic training through 44.5% for lieutenants to more than 95% for colonels and above (1983 data, provided by Colonel Bray, Department of National Defence, letter of April 6, 1984).	
Line 5	Department of National Revenue, <i>Taxation Statistics, 1983</i> , Table 2. The amount of taxable capital gains is multiplied by two to obtain total capital gains.	
Line 6	Statistics Canada, <i>System of National Accounts, National Income and Expenditures Accounts</i> , cat. no. 13-201, 1981, Table 55.	
Line 7	We obtain in terms of wages and salaries (8.4%) the payments by employers to public and private plans from Statistics Canada, <i>Employee Compensation in Canada 1978</i> , cat. no. 72-619, Table 1. We then apply this percentage to wages and salaries in Canada taken from <i>Income Distribution by Size in Canada, 1981</i> , Table 49, to obtain the value of fringe benefits.	

Appendix B

Regression Analysis Results

This appendix describes multivariate analysis, the data and the variables used in our analyses, and present regression coefficients and t-statistics for our results. To measure the effect of various individual characteristics on the earnings of a group of individuals, a functional relationship must be determined that specifies what characteristics affect earnings and how (for example, additively or multiplicatively) they affect them. That done, an appropriate multivariate statistical technique is used to calculate the parameters of the functional relationship; these calculations yield the net effect of each characteristic on earnings.

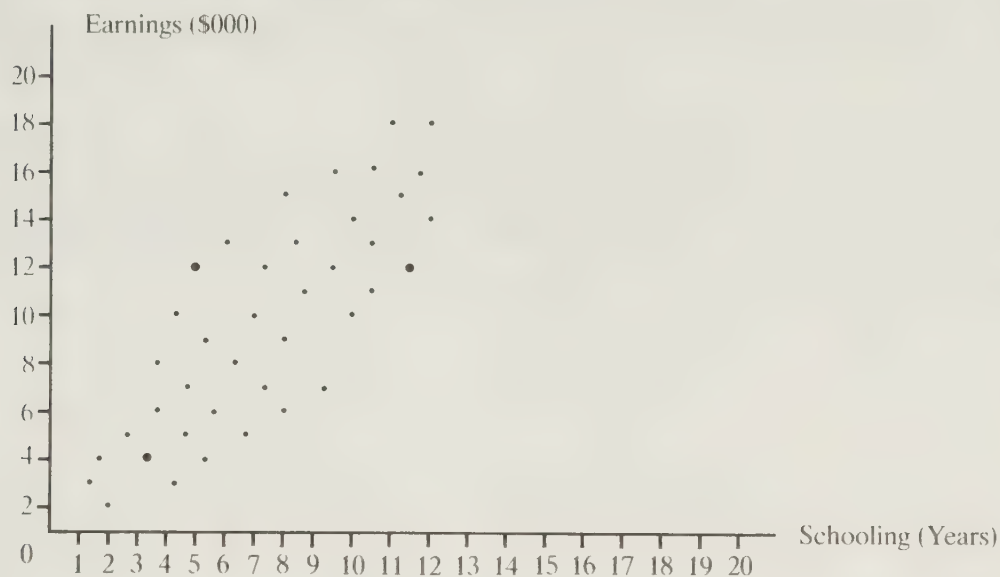
Once the list of characteristics (variables) that explains earnings has been established, the form of the relationship between the characteristics and earnings must be chosen. Many forms are possible. In this study, we have chosen a form such that the effect of each variable is measured as a percentage of earnings: this is the most common form of functional relationship in this kind of study. In more technical terms, we use a semi-logarithmic relationship between earning and its explanatory variables

$$(\ln E = \beta_0 + \beta_1 X_1 + \beta_2 Y_2 + \dots + \mu).$$

Having chosen the characteristics that explain earnings and the functional form that links the characteristics to earnings, we must estimate the effects of the characteristics on earnings. We estimate this effect using ordinary least squares (OLS), a technique of multivariate analysis. To understand how OLS works, let us examine Figure 1-B1 where, by construction, each dot represents the earnings and schooling of one individual. Let us ignore for the moment the existence of other factors (sex, age, etc.) that also explain earnings. Looking at all the observations (individuals) in Figure 1-B1, one notices a positive relationship between earnings and schooling. But what is the exact effect of one more year of schooling on earnings (what is the exact shape of the relationship)? If we had only the two observations (dots) identified as (a) and (b), we could draw a straight line between them and use algebra to calculate the shape of the relationship (its slope and the value of the intercept) and thus the effect of one extra year of schooling on earnings. If we had a third observation, for example dot (c), using algebra to ascertain the shape of the relationship becomes more difficult but is still feasible. But with a larger number of observations, we can no longer use algebra; we must use a statistical technique. The technique we use in our analysis is ordinary least squares — the standard technique used to establish the relationship between earnings and one or several variables. OLS will allow us to draw a line that best fits¹⁰⁷ the observations reported in Figure 1-B1 (or, where several variables are

used, a multidimensional plane). OLS allows us to calculate the net effect of each characteristic (variable) on earnings.

FIGURE 1-B1 Relationship between Earnings and Years of Schooling



Note: Plot points are only illustrative.

The Data and the Variables

The data used are from the “Individuals aged 15 and over with and without income, 1981,” micro data file produced by Statistics Canada, Consumer Income and Expenditure Division. We selected individuals with earnings greater than zero (position 27–33).¹⁰⁸ The variables used are as follows.

- the natural logarithm of earnings (position 27–33).
- sex (position 230).
- experience. The variable is calculated by subtracting from the age variable (position 228–29) the sum of six plus the number of years of schooling. Since the data are available only in the form of eight levels of schooling, we assumed the following years of schooling for each level: 1 = 4 years; 2 = 9.5 years; 3 = 11 years; 4 = 12 years; 5 = 13 years; 6 = 14 years; 7 = 15 years; 8 = 16.5 years.
- education level (position 231).
- mother tongue (position 232).
- marital status (position 222).
- place of residence (position 8).
- province of residence (position 6–7).
- hours worked. The usual number of hours worked (position 243–44) is multiplied by weeks worked in 1981 (position 253–54).
- occupation (position 239–40). There are 49 occupational categories on the data file, which we divided into 16 as follows: 1, 2, 3 = 1; 4, 5, 6

= 2; 7 = 3; 8, 9, 10 = 4; 11 = 5; 12, 13, 14 = 6; 15, 16, 17, 18, 19, 20 = 7; 21, 22 = 8; 23, 24, 25, 26 = 9; 27, 28, 29 = 10; 30, 31 = 11; 32, 33, 34, 35, 36, 37, 38, 39, 40 = 12; 41, 42, 43 = 13; 44, 45 = 14; 46, 47 = 16 (omitted); 48, 49 = 15.

In Table 1-B1, we used weighted observations. In our regressions, we divided all individual weights by the average weight for Canada, thereby achieving an uninflated number of observations for purposes of the regression.

Statistics Canada warns the users of the micro data file used here that the use of a clustered sample results in incorrect calculations of standard errors when using standard regression packages such as SPSS (which we used). We therefore used a t-statistic of 5.

TABLE 1-B1 Regression Coefficients, Earnings of Canadians, 1981

Characteristics	Personal Characteristics Approach		Employment Characteristics Approach					
	(1)	(2)	(3)	(4)				
Constant	8.13	(442.8)	7.92	(374.5)	7.40	(396.0)	7.62	(297.9)
Sex (with respect to men)	-0.74	(-81.2)	-0.76	(-83.0)	-0.48	(-58.7)	-0.42	(-45.2)
Experience	0.10	(102.8)	0.08	(72.2)	0.04	(44.8)	0.04	(38.3)
Experience ²	-0.002	(-84.0)	-0.001	(-66.6)	-0.001	(-40.6)	-0.001	(-31.2)
Schooling (with respect to none or primary)	-0.04	(-2.2)	-0.07	(-3.9)	-0.04	(-2.5)	-0.02	(-1.3)
9-10 years	0.21	(10.6)	0.15	(7.7)	0.12	(7.4)	0.12	(7.5)
11 years	0.56	(31.9)	0.46	(26.5)	0.31	(20.7)	0.29	(19.0)
12 years	0.49	(17.3)	0.43	(15.1)	0.30	(12.2)	0.27	(11.2)
13 years	0.57	(27.4)	0.47	(22.7)	0.37	(20.7)	0.32	(18.0)
Post-secondary, no diploma	0.75	(39.1)	0.64	(33.4)	0.46	(27.6)	0.38	(22.2)
Post-secondary, diploma	1.03	(51.7)	0.89	(44.8)	0.65	(37.4)	0.55	(28.6)
University degree								
Mother Tongue (with respect to English)	0.05	(4.5)	0.07	(3.8)	0.09	(6.3)	0.08	(5.6)
French	0.03	(2.1)	-0.02	(-1.6)	-0.03	(-2.1)	-0.01	(-0.9)
Other								
Marital Status (with respect to single)	—	—	0.37	(29.2)	0.25	(23.2)	0.23	(21.4)
Married								
Other (widowed, divorced, separated)	—	—	0.33	(15.5)	0.20	(11.1)	0.19	(11.0)

TABLE 1-B1 (cont'd.)

Characteristics	Personal Characteristics Approach		Employment Characteristics Approach	
	(1)	(2)	(3)	(4)
Place of Residence (with respect to rural)	—	—	—	—
Urban 100,000 + inhabitants	—	0.26 (20.2)	0.22 (19.5)	0.15 (13.5)
Urban 30,000-99,999	—	0.17 (8.9)	0.13 (8.3)	0.08 (5.3)
Urban 30,000	—	0.11 (7.2)	0.10 (7.0)	0.05 (3.4)
Province of Residence (with respect to Ontario)	—	—	—	—
Newfoundland	—	-0.01 (-0.3)	0.13 (4.4)	0.11 (4.0)
Prince Edward Island	—	-0.20 (-3.0)	-0.10 (-1.7)	-0.07 (-1.2)
Nova Scotia	—	-0.10 (-3.5)	-0.03 (-1.3)	-0.04 (-1.5)
New Brunswick	—	-0.15 (-4.9)	-0.03 (-1.1)	-0.05 (-2.1)
Quebec	—	0.01 (0.7)	-0.06 (3.7)	0.06 (3.9)
Manitoba	—	-0.03 (-1.3)	-0.03 (-1.5)	-0.01 (-0.6)
Saskatchewan	—	0.07 (2.9)	0.03 (1.2)	0.10 (4.8)
Alberta	—	0.21 (13.4)	0.17 (12.5)	0.18 (13.3)
British Columbia	—	0.10 (6.3)	0.17 (12.9)	0.17 (13.2)
Hours worked	—	—	—	—
Effect of one hour	—	—	0.001 (136.2)	0.001 (132.9)
Occupation (with respect to material machine)	—	—	—	—
Managers	—	—	—	0.15 (6.1)
Scientists and Engineers	—	—	—	0.21 (7.6)

Characteristics	Personal Characteristics Approach		Employment Characteristics Approach	
	(1)	(2)	(3)	(4)
Social scientists	—	—	—	-0.09 (-2.5)
Medicine and health	—	—	—	0.10 (3.8)
Artists	—	—	—	-0.31 (-8.9)
Teachers and professors	—	—	—	0.01 (0.5)
Clerical	—	—	—	-0.02 (-0.9)
Sales	—	—	—	-0.28 (-12.9)
Services	—	—	—	-0.38 (-17.3)
Agriculture, fisheries	—	—	—	-0.58 (-21.5)
Forestry, mining	—	—	—	0.23 (6.1)
Processing, fabricating, assembling	—	—	—	0.06 (0.3)
Construction	—	—	—	0.14 (5.8)
Transportation	—	—	—	-0.003 (-0.1)
Other	—	—	—	-1.18 (-33.5)
F-Statistics	1,945	985	1,954	723
Adjusted R	0.30	0.32	0.49	0.52
Number of Observations	55,194	55,194	55,194	55,194

Source: Statistics Canada (1982), Survey of Consumer Finances, micro data tape, "Individuals aged 15 and Over With and Without Income, 1981."

Calculations done by the author.

Note: t-statistic in brackets.

Notes

This study was completed in January 1985.

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1. For a more complete discussion of these issues, see Osberg (1985).
2. This study starts with 1951 because that is the first census year after World War II and the first year with data from the Survey of Consumer Finances. It ends with 1981 because that is both the year of the last census and the last year for which a wide variety of data sources was available in 1984, when this paper was written.
3. For example, the child tax credit was introduced in 1978, and the definition of taxable income changed in 1972 to include capital gains, fellowships, unemployment insurance benefits, etc.
4. Apart from Canada and the eight countries listed in Table 1-3, these 19 countries include Belgium, Denmark, Finland, Ireland, New Zealand, Norway, Spain, Sweden, and Switzerland.
5. For example, in families of two adults and one earner, both adults share the income of the earner and the production of the non-earner in the home.
6. Equivalence scales are used to account for the fact that although a given amount of income does not permit a unit of four individuals the same level of consumption as a unit of one individual, income cannot simply be divided by the number of individuals because there are economies of scales in consumption. Beach, Card, and Flatters (1981), for example, calculated the equivalence scale implicit in low income cut-offs in 1973 to be 1.00, 1.45, 1.85 and 2.20 (p. 260) for families of one, two, three, or four adults, respectively. Thus a family of four will be as "well off" as a family of one with an income of \$5,000 if its income is \$11,000, not \$20,000. See *ibid.*, chap. 10, for a discussion of these issues.
7. Reviewing these studies, Davies, St-Hilaire, and Whalley (1984, p. 635) concluded that "about one-half of annual earnings inequality disappears when one looks at lifetime earnings."
8. The data were assembled by the Unemployment Insurance Commission and the Treasury Board using information from the UI data files and income tax data.
9. The Gini coefficient varies from zero to one. The closer it is to zero, the greater the equality of incomes; the closer it is to one, the greater the inequality. Quintile shares represent the percentage of income going to each fifth of the population, ranked from the lowest to the highest income. If all economic units had the same income, each share would equal 20 percent.
10. For further information on the nature of incomes included and excluded and on the sample, see Statistics Canada, *Income Distributions by Size in Canada, 1982*, cat. no. 13-207.
11. As shown by Rashid (1983) when comparing distributions of income for 1980 obtained from the census and the SCF.
12. There is almost perfect agreement between the SCF and the National Accounts concerning the value of wages and salaries Canadians received in 1981. The value of transfer payments to individuals recorded by the SCF is only about four-fifths of transfer payments recorded in the National Accounts and the value of investment income recorded by the SCF is only about two-thirds of the amount in the National Accounts. See Statistics Canada, *Income Distributions by Size in Canada, 1981*, cat. no. 13-207, pp. 41-42. Using 1973 SCF data for Ontario, Beach, Card, and Flatters (1981, p. 250) found that "adjustments for under reporters of (various items) . . . when combined yield only a slight though unambiguous overall increase in inequality."

13. For a more detailed discussion of imputations for income in kind and capital gains, see Beach, Card, and Flatters (1981, chaps. 9 and 11).
14. The distribution of wealth in Canada is not examined in this overview. Oja (1980) reported Gini coefficients for net worth of 0.716 in 1970 and 0.686 in 1977; the top quintile share of net worth was 70.9 percent in 1970, and 68.1 percent in 1977. Wealth is less equally distributed than income in Canada. See the data on the Gini coefficients for income in Table 1-7 of this overview. For a comparison of wealth in Canada, the United States, and the United Kingdom, see Harrison (1980).
15. Unequal distribution of income is not the same as inequitable distribution. An equitable distribution of income is a value-laden concept that is not examined here.
16. Stanbury and Lerner (1983), however, have examined the redistributive effects of some regulations (on agricultural products and on taxi permits, for example) in Canada.
17. In 1951, 1961, 1971, and 1981, the coverage of comparable income in the SCF and in the National Accounts was 94 percent, 95 percent, 95 percent, and 93 percent, respectively. The percentages of coverage for employment income are always almost 100 percent. The respective percentages of coverage for investment income are 62 percent, 57 percent, 70 percent, and 67 percent, whereas those for transfer payments are 82 percent, 81 percent, 71 percent, and 75 percent. Sources: Statistics Canada, *Distribution of Non-Farm Incomes in Canada by Size, 1951*, cat. no. 13-503, p. 36; *Distribution of Non-Farm Incomes in Canada by Size, 1961*, cat. no. 13-521, p. 56; *Income Distributions by Size in Canada, 1971 and 1981*, cat. no. 13-207, p. 128, and p. 42.
18. Statistics Canada (1984, Table 1.7) (census data).
19. Ibid., Table 1.10 (census data).
20. From 20.2 percent of all units in 1951 to 28.3 percent in 1981. Sources: Statistics Canada, *Distribution of Non-Farm Incomes in Canada, 1951*, cat. no. 13-503, p. 8; *Income Distributions by Size in Canada, 1981* cat. no. 13-207, Tables 1 and 28, pp. 45 and 76.
21. Statistics Canada, *Incomes of Non-Farm Families and Individuals in Canada, Selected Years, 1951-1965*, cat. no. 13-529, Table 14; *Income Distributions by Size in Canada, 1981*, cat. no. 13-207, Table 32.
22. This presumes that additions to the stock of unattached individuals have characteristics similar to the existing stock. It should be noted that both younger and older individuals are likely to have lower incomes than the mean age unattached individual because they are less often employed full time (since they are students, looking for work, or retired). Hence, changes in the age distribution of unattached individuals from 1951 to 1981 should lead to an even lower mean income of unattached individuals.
23. Statistics Canada, (1984), Table 9.1 (census data).
24. Data on the participation rate of women in 1961 are from MacLeod and Horner (1980, Table A-1, p. 23); for 1981, see Statistics Canada (1984), Table 9.4. For data on earners, see Statistics Canada, *Incomes of Non-Farm Families and Individuals in Canada, Selected Years, 1951-1965* cat. no. 13-529, Table 14; *Income Distributions by Size in Canada, 1981*, cat. no. 13-207, Table 20.
25. We do not have comparable data for other years.
26. In 1971, family units in the first quintile received 29.5 percent of all transfer payments; in 1981, family units in the first quintile received 29.0 percent of all transfer payments. The percentages for the four other quintiles are 29.3 percent, 15.4 percent, 12.9 percent, and 12.9 percent in 1971 and 27.5 percent, 17.2 percent, 14.1 percent, and 12.3 percent in 1981. Source: unpublished data, Survey of Consumer Finances for 1971 and 1981, courtesy of R. Love, Consumer Income and Expenditure Division, Statistics Canada, November 30, 1984.
27. Data on Italy and Spain are excluded from the presentation of Sawyer's results.
28. The source for the Gini coefficient in Canada is Statistics Canada, *Income After Tax Distribution by Size in Canada*, cat. no. 13-210, Text Table V; the Gini coefficient for the United Kingdom is from *Economic Trends* (London: C.S.O., February 1982), p. 82; the source for Gini coefficient in the United States is *Money Income of Household, Families and Persons in the United States, 1979* (Washington. D.C.: Bureau of the Census, 1979), Table 5.

29. We limit ourselves to the 1961–81 period because official data are unavailable before 1961. Using the 1961 income cut-offs, deflating them by the CPI back to 1951 and applying them to distributional data, we estimate the number of poor families at 44.0 percent and the number of poor unattached individuals at 57.0 percent in 1951. The CPI deflator used is 0.88. The 1961 low income cut-offs are found in Statistics Canada, *Statistics on Low Income in Canada*, cat. no. 13-536, p. 8. The distribution of families by family size and income is found in Statistics Canada, *Distribution of Non-Farm Incomes in Canada by Size, 1951*, cat. no. 13-503, Table 8. Income groupings are broken down assuming a linear distribution of units. The number of families by family size is found in Statistics Canada, *Incomes of Non-Farm Families and Individuals in Canada, Selected Years, 1951–1965*, cat. no. 13-529.
30. For a discussion in a Canadian context of measurement issues, see Podoluk (1980).
31. The calculation leading to these low income cut offs uses the percentage of income spent by the average Canadian family on necessities (38.5 percent in 1978, the last survey year before 1981) and then adds an arbitrary 20 percent. Low income cut-offs are calculated for various family sizes and areas of residence of various size. Low income cut-offs are often referred to as poverty lines (for example, by the National Council on Welfare), although not by Statistics Canada.
32. CCSD are from Ross (1984), Table 2. Statistics Canada data are from *Income Distributions by Size in Canada, 1981*, Table 85.
33. According to data collected by Decima Research, in the fall of 1983, 78 percent of Canadians thought that benefits and social services offered to the poor should be increased. That percentage was 84 percent in 1981.
34. In 1983, 14.6 percent of families, 41.1 percent of unattached individuals, and 18.0 percent of people were poor. Source: Statistics Canada, *Income Distributions by Size in Canada, Preliminary Estimates, 1983*, cat. no. 13-206, Table 9, p. 23; and *Statistics Canada Daily*, cat. no. 11-001E, September 14, 1984.
35. For a brief description of these programs, see the section on public policies toward the elderly. Note that throughout this paper poverty is measured using money income. As argued in Appendix A and in Beach, Card, and Flatters (1981), the inclusion of the value of services from owner-occupied housing raises the income of the elderly, who are more likely than other Canadians to own mortgage-free homes.
36. Source for 1971 data is Statistics Canada, *Family Statistics on Low Income Families 1970*, 1971 Census of Canada, cat. no. 93-773, Table 2. Source for 1981 data is Statistics Canada, *Economic Families in Private Households: Income and Selected Characteristics 1981*, 1981 Census of Canada, cat. no. 92-937, Table 10A.
37. For a discussion of the determinants of the labour force participation of women, see Alice Nakamura and Masao Nakamura, "A Survey of Research on the Work Behaviour of Canadian Women," in *Work and Pay: The Canadian Labour Market*, volume 17 of the research studies prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).
38. We neglect the effects of parents' characteristics on an individual's earnings. These effects can be quite important.
39. The effects of occupation on earnings are reported in Appendix B, Table 1-B1.
40. The earnings equation used here is one of the simplest possible. We could have separated men and women; and then examined the earnings of Canadians by age groups, marital status, etc., by estimating separate equations for each group. We could have included interaction variables to account, for example, for the interaction of the different variables such as sex and schooling. We could also have accounted for what economists refer to as sample selection bias, which may result in this case because non-earners are excluded from our analysis. Finally, we could have added variables such as the industry of employment or the date of migration. We chose not to do so because our purpose is to illustrate the advantages of the use of multivariate analysis without burying the reader in 20 pages of statistical results.
41. Experience is defined as the number of years after the end of the schooling period. It is calculated as age minus years of schooling and minus six (to account for the age

- of minimum schooling). Such a definition is more appropriate for men than for women, who often interrupt work because of child-rearing responsibilities.
42. We leave aside the issue of the acquisition of skills for it is dealt with in the overview of the labour market.
 43. For an international comparison see Blomqvist (1985).
 44. Data are not available on the distribution of tax expenditures for family units by income quintile. Our result differs from those that would be obtained using taxation statistics, which are for individuals, for we use data for families and unattached individuals.
 45. The list of these expenditures is found in the publications of Statistics Canada listed under the general heading Government Finance (cat. nos. 68-202, 68-204, 68-207, and 68-211).
 46. The following discussion draws on chap. 4 of Kesselman (1983). Data which follows are for 1981. Unemployment related benefits given below omit sickness, maternity, and retirement benefits.
 47. For a description of recent federal employment creation programs, see chap. 1 of *The National Finances, 1982-1983* (Toronto: Canadian Tax Foundation, 1983).
 48. In Canada, all firms must pay the same premium (%) per dollar of insurable earnings. If premiums were experience rated, firms' premiums would vary with the incidence and length of layoffs.
 49. Note that the 30 percent clawback takes into account part of the unemployment insurance recipient's income.
 50. For a history of the welfare system in Canada, see Guest (1980).
 51. For a good description of CAP, see Hum (1983).
 52. The term "employable" is hard to define. The UI system covers individuals who have worked in the past and are therefore presumed to be employable. The welfare system covers individuals who may or may not have worked and whom society may or may not deem employable (e.g., single males and single mothers of young children, respectively).
 53. Régie de l'assurance-maladie du Québec, *Statistiques annuelles, 1981*. Data on dental programs are found on p. 134, Table E; data on prescription drugs are found on p. 227, Table B.
 54. Québec, ministère des Affaires sociales, *Rapport annuel, 1980-1981*, p. 53.
 55. For a detailed description of these programs, see National Council on Welfare (1981).
 56. We take most of our information from Statistics Canada, *Workmen's/Workers' Compensation*, cat. no. 86-501 (1980). Note that disability benefits are also paid out by CPP/QPP.
 57. There are also boards in the territories and federal laws aimed at specific groups of individuals, such as seamen and aircrews.
 58. Strictly speaking, firms pay the premiums. However, premiums enter the calculations of the firms as part of the cost of labour. They could possibly be shifted in part to purchasers of the firm's products from the firm or to workers.
 59. Or seven if we include low income housing (see the section on policies toward housing). We do not cover programs such as reduced bus fares.
 60. A Spouse's Allowance was introduced in 1975 for pensioners' spouses aged 60 to 64.
 61. For married pensioners, the reduction formula differs and takes spousal income into account.
 62. For a description of the family support system see, in particular, National Council on Welfare (1983).
 63. A program is said to be progressive if the share of its gross benefits going to a lower income group is higher than the lower income group's share of income. When higher income groups so benefit from a program, the program is described as regressive.
 64. Federal allowances increase by \$5.99 when the child reaches 12.
 65. Quebec adds a non-taxable family allowance varying from \$7.09 for the first child to \$14.20 for the fourth child and subsequent children.

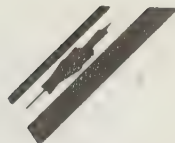
66. In 1981, families with an income above the threshold had their credit reduced by five cents for every dollar of income above \$23,470.
67. In 1981, this exemption reduced federal income tax by \$124 for an individual with a taxable income of \$10,000 and by \$212 for an individual with a taxable income of \$50,000. (The reduction is evaluated at the marginal tax rate.)
68. Quebec allows no such exemption for children under 16. For those 16 and 17, the exemption was \$670 in 1981.
69. Krashinsky (1984) provides an excellent survey of these issues.
70. We neglect the case of child abuse. However, experts usually distinguish between children less than 2–2½ years old, for whom it is important to have a high amount of attention by the same adult, and older children, who play more easily with their peers with less adult supervision.
71. Breton (1984) develops this idea in greater detail.
72. This scheme raises the following question. Should a mother choosing to raise her children herself be allowed to redeem this allowance? On economic grounds, the answer should be yes unless the scheme is restricted to working mothers. The Quebec government allows mothers either to deduct child care expenses from income up to a maximum or to claim an allowance (\$300 in 1983). That allowance can be claimed regardless of whether the mother works or not.
73. For a more detailed discussion of the financing of these programs, see Boadway and Bruce (1985).
74. Saskatchewan, Nova Scotia, and Prince Edward Island levied no charges; Manitoba, Ontario, and Quebec charged only chronic care patients; British Columbia, Alberta, New Brunswick, and Newfoundland had various charges (admission charges, day surgical services, outpatient services, etc.). Source: "Provincial Health Insurance Plans: Extra Billing/User Charges by Hospitals," Ottawa: Department of National Health and Welfare, mimeographed, November 1983.
75. A complete list of these services as of January 1, 1981, is in *Medical Care Annual Report, 1980–1981* (Ottawa: Department of National Health and Welfare). Table 24 provides information on dental services, prescription drugs, and hearing and visual aids. For detail such as the start-up date for a variety of these programs, see Forget (1985).
76. For example, pregnancy is often considered a nine-month "illness": workers with a pregnant family member often may not change employers if they wish to maintain insurance coverage.
77. The choice between 13 percent and 14 percent depends on the choice of a demographic scenario.
78. For 1951 figures, see *Canada Year Book, 1970–1971*, Life Expectancy, Table V-31. For 1981 figures, see Statistics Canada, *Life Expectancy: Life, Tables Canada and Provinces, 1980–1982*, cat. no. 84–532.
79. The description of rental-housing and of owned-housing programs is taken from the *Annual Reports* of the Canada Mortgage and Housing Corporation and from the following three references: Denis and Fish (1972) (especially for the 1973 programs); Rose (1980) (especially for the 1964–78 programs) and Andersen (1984) (for the 1976–84 programs). We also wish to thank Joyce Potter for additional background material.
80. We neglect the slum clearance grants and the Full Recovery Low Rental Housing program introduced in the 1938 National Housing Act.
81. Provincial governments often passed part of these costs on to municipalities.
82. Two types of public housing were built under this program: partial recovery housing with rents geared to income and family size, which created a deficit, and full recovery housing where "rents are set so as to recover the full capital and operating costs" (CMHC, *Annual Report, 1952*, p. 16). In full recovery housing, income may not exceed a given multiple (four to six) of the rent, whereas in partial recovery housing, rent may not exceed a percentage of income (25 percent if rent includes heating, 20 percent if it does not). Full recovery housing was sold off in the 1970s, mainly to its occupants.
83. Because in 1978 the program was limited to governments that had made use of it in the preceding ten years.

84. The rate of interest on these loans varied from time to time but was always below the market rate faced by private borrowers and above the federal government borrowing rate at that time.
85. Provinces, municipalities, or charitable bodies put up the remaining amount of money needed.
86. Building cooperatives in the Maritimes, particularly Nova Scotia, were exceptions.
87. We do not discuss provincial or municipal renovation programs.
88. For more details on these plans, see Falk (1982).
89. Manitoba also offers a housing allowance to low-income families (SAFFR, since 1981).
90. Source: CMHC, unpublished survey results.
91. In some provinces, separate (Catholic) school boards do charge a fee at least for certain grades. However, parents have the alternative of sending their children to the free public school system.
92. These ages are 7–15 in Newfoundland, Prince Edward Island and British Columbia; 7–16 in New Brunswick, Manitoba, Saskatchewan and the Northwest Territories; 6–16 in Ontario; 6–15 in Quebec and Alberta; and 5–16 in Nova Scotia. Source: *Canada Year Book, 1980–1981*.
93. See the paper by Kitchen and McMillan (1985) for a description of these differences.
94. Except in the schooling of children of Armed Forces personnel and of children on Indian reserves and the provision of minority language education.
95. See Hanushek (1979) for a review of the literature on that point.
96. Statistics Canada, *Distributional Effects of Health and Education Benefits, Canada, 1974*, cat. no. 13–561, Table N.
97. Ibid., p. 45.
98. These results are taken from recent surveys of Canadians. For a review of results from partial surveys and of older national surveys see Anisef (1984). The results of that review are in agreement with the findings reported above.
99. Other exclusions are not examined here either because of lack of data (inheritances) or because their exclusion is a question of the survey's internal coherence (income tax refunds, given the use of gross income).
100. Department of National Revenue, *Taxation Statistics, 1983*, Table 2. These individuals represent 2.2 percent of individuals.
101. A more correct measure of changes in the command over goods and services in a given year is accrued capital gains. See Beach, Card, and Flatters (1981) for a more complete discussion of adjustments for capital gains.
102. Statistics Canada, *System of National Accounts National Income and Expenditure Accounts, 1981*, cat. no. 13–201, Table 55. Other sources of imputed income are self-consumption of agricultural products by farmers and food and board provided by employers.
103. Statistics Canada, *Income Assets and Indebtedness of Families in Canada, 1977*, cat. no. 13–572, Table 14. We use average equity for our calculations and weight it by the number of units in the appropriate income groups (using the 1978 cut-offs). Source: Statistics Canada, *Income Distributions by Size in Canada, 1976*, cat. no. 13–207.
104. Statistics Canada, *Income Distribution by Size in Canada, 1981*, cat. no. 13–207, Table 49.
105. Calculations by the author using data from *ibid.*, Tables 49, 74, and 75.
106. Statistics Canada, *Employee Compensation in Canada, 1978*, cat. no. 72–619, Table 3.
107. In ordinary least square, the criterion of best fit is defined as the minimization of the sum of the squared distance between each observation and the calculated line; hence the name of the technique.
108. The position number is included to allow researchers interested to replicate these results. Position number refers to the codebook of the data file produced by Statistics Canada.

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The Underground Economy: A Review of the Economic Literature and New Estimates for Canada

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Over the past ten years or so, economists have become increasingly interested in the underground economy and its importance in industrialized nations. There are several reasons for this. On the one hand, the very existence of an underground economy implies that measurements of economic activity and especially of the gross national product (GNP) underestimate its real extent. Generally, tax evasion is closely linked to the existence of underground activities. These activities also pose problems related to income distribution; it may well be that certain groups of individuals are more likely than others to participate in them, with the result that official statistics give a distorted picture of reality.

This study reviews the literature dealing with the underground economy and presents new estimates of its scope in Canada. The study is intended only to measure the importance of the underground economy, not to determine its causes. The term underground economy is hard to define because it has been employed in various contexts to describe different phenomena. The most accurate definition refers to activities which, in principle, should be included in the calculation of the gross domestic product but are excluded because they are deliberately hidden. Certain sectors of economic activity that are automatically linked to this phenomenon (domestic output and unproductive illegal activities) should be dissociated from it; domestic output encompasses all goods produced and consumed within the household, and unproductive illegal activities (like theft and extortion) only entail a redistribution of wealth without additional output. Activities related to volunteer work and leisure are also excluded from our definition. The underground economy is thus limited to undeclared interest income, productive crime and moonlighting. It is difficult to give a single definition of the phenomenon, however, because of the variety of methods used to measure it. The sections that follow on these methods therefore begin with the definition best suited to the particular method.

Methods of assessing the underground economy can be divided into three main categories. The first includes all methods based on outright speculation, which are often used to attract the attention of politicians, the public and researchers. The second groups together conjectural methods, i.e., assessments carried out on the basis of first-hand information.¹ The third category, which is the one we will use, includes all studies based on a scientific method of investigation.

The first part of the study reviews these various methods of assessing the underground economy. The second examines the methods employed in Canada. The third outlines new assessments of the underground economy in Canada, obtained on the basis of methods not previously used for this country. The paper concludes by examining the relationship between taxes and underground activities, and then assessing the results obtained.

Survey of Foreign Literature

Estimating methods mentioned in foreign literature fall into four main categories:

- methods based on statistical discrepancies;
- audit methods;
- methods based on labour market statistics; and
- methods based on monetary aggregates.

Each category is dealt with separately. The methods associated with each are first outlined and then critically evaluated.

Methods Based on Statistical Discrepancies

DESCRIPTION

The first type of exercise which can be carried out is to compare the value of the GNP when it is calculated with respect to “expenditure” in national accounting with its value when it is calculated with respect to “income.” To define an economy’s overall output, “national income” is generally used: it indicates the value added over one year, i.e., the total of new goods and services produced during the preceding 12 months. The value added can be determined in several ways. One approach, called analysis from the point of view of expenditures, is to calculate the total expenditures in goods and services by all the economic agents. Another approach, however, is also possible. Called analysis from the point of view of income, it consists of adding up the total payments the economic agents receive in exchange for goods or services they produce.

Theoretically, both approaches should give similar results; however, in practice, the methods of calculation show discrepancies that provide an estimate of the underground economy. National accounting takes this

difference into consideration and deems it a residual error. Measured in this way, the phenomenon corresponds to the discrepancy between what economic agents receive and what they spend. A positive difference suggests that the agents have purchased goods in the underground economy, while a negative one may indicate that they have worked there. Hence such an analysis makes it possible to discern illegal transactions carried out in the underground economy and assess the portion of gains derived from illegal transactions that have been accounted for in the official economy. The definition of the underground economy implicit in these methods resembles the one mentioned earlier. A number of writers, such as Dilnot and Morris (1981), Park (1981) and O'Higgins (1981) have adopted this type of analysis.

The second type of exercise consists of comparing data on income drawn from taxation statistics with data derived from national accounting. The discrepancy between both sets of data indicates the extent of tax evasion. Using this method, Park (1981) estimated that the underground economy in the United States accounted for 9.4 percent of the GNP in 1948, 5.5 percent in 1968 and 4 percent in 1977. This method shows that the U.S. underground economy has decreased in importance in the last three decades. Using the same method, Petersen (1982) similarly noted a recession in the underground economy of West Germany. On the other hand, O'Higgins (1981) noted that this sector of the economy in the United Kingdom grew; its growth is three times greater than the growth in declared GNP between 1970 and 1978. And yet its absolute importance is estimated to be only 2.5 to 3 percent of the country's GNP for 1978 (Macafee, 1980). No application of this method to the underground economy in Canada can be found in this country's literature.

PROBLEMS POSED BY THE METHODS

Methods based on discrepancies in the analysis of income and expenditures generally underestimate the scope of the underground economy because they disregard a number of important factors. In particular, no account is taken of the fact that it is harder to assess the gross national product by analyzing expenditures, because the basic data are scattered. The frequent use of taxation statistics in calculating certain data implies that the latter reflects the actions of tax authorities. Such a practice distorts the analysis of the changes that occur in the data over the years.

The methods that are based on discrepancies in taxation data and national accounting data are affected by the interdependence of both sources; the slightest change in the methods of calculation employed can attenuate their efficacy. In Canada, employment income which appears in national accounting has been drawn from taxation statistics since 1966, when the Canada Pension Plan was introduced. Such income represents only 60 percent of overall personal income. The crucial extent to which both

sources of data are interdependent thus become apparent. Moreover, a considerable portion of non-taxable income does not appear in the national accounts. This problem will be even more pronounced in a country which relies heavily on taxation statistics to assess its national income.

The fact that low-income households do not always file an income tax return also poses a problem with respect to the use of taxation data. The failure to correct data to take such cases into account means running the risk of distorting the results. Furthermore, national accounting and taxation statistics adopt different definitions. For example, the former incorporates universities' and political parties' incomes into personal income, which is not the case with respect to the latter. Table 2-1 indicates the results obtained using the method based on discrepancies in several countries.

Audit Methods

DESCRIPTION

In these methods all personal income tax returns for certain professions or income groups are systematically audited to identify those taxpayers who are hiding their actual income from the tax authorities. When measured in this way, the underground economy really only encompasses tax evasion. As a result, it is incomplete as measured.

Audit methods have been used extensively in certain countries, including France, whose audit system is based on an arbitrary sampling of taxpayers throughout the country. The revenue ministry is also attempting to develop an algorithm that would enable it to determine which groups of individuals are most likely to hide part of their income from tax authorities to facilitate sampling (OECD, 1980). In Sweden, on the basis of results obtained during the audit of a small number of individuals, it was deduced that undeclared income accounted for between 8 and 15 percent of overall income in 1980 (Hansson, 1980, p. 598). In the United States, based on a sampling of 50,000 households, the United States General Accounting Office (GAO, 1979) estimated that between 5.6 and 7.8 percent of individuals who should file an income tax return fail to do so. These figures suggest that the underground economy in the United States in 1979 (IRS, 1979) represented between 5.9 and 7.1 percent of the GNP.

PROBLEMS POSED BY THE METHODS

The advantage of this type of analysis is that it provides information about those groups of individuals most likely to evade taxes. However, it does not enable the user to obtain a precise estimate of the overall importance of the phenomenon, since the results obtained for one subgroup are not necessarily representative of the population. Moreover, this method cannot provide an accurate assessment of undeclared income: it only takes into account deductions claimed in error but does not include activities related

TABLE 2-1 Estimates of Underground Economies Using Discrepancies Method

Country	Earliest Known Estimates			Most Recent Known Estimates		
	Year	Estimate (Percentage of GNP)	Source	Year	Estimate (Percentage of GNP)	Source
Belgium	1965	18.6	Frank (1972)	1970	18.9	Frank (1976)
United States	1948	9.4	Park (1981)	1977	4.0	Park (1981)
France	1965	23.2	Roze (1971)	—	—	—
West Germany	1968	12.4	Petersen (1982)	1974	4.8	Petersen (1982)
United Kingdom	1970	1.0	O'Higgins (1981)	1978	2.9	O'Higgins (1981)
				1978	2.5-3.0	Macafee (1980)
Sweden	1968	4.2-5.8	Hansson (1982)	1979	3.9-6.5	Hansson (1982)

to barter or illegal trade in any way unless the revenues they generate are accounted for with the ones generated by legal activities. The methods employed in the United States exclude individuals who declare only part of their income; those used in France disregard individuals who do not file an income tax return.

Methods Based on Labour Market Statistics

DESCRIPTION

This category covers two types of methods. The first consists of comparing the official rate of participation of individuals in the labour force with that obtained through surveys. This comparison makes it possible to determine the absolute rate of participation of those individuals in undeclared sectors of activity. Thus the proportion of individuals participating in the underground economy can be established by this method, but its scope cannot be assessed. Consequently, it is impossible to measure the importance of the underground economy as a percentage of the GNP as is the case when the other methods are used.

Through surveys, it is possible to establish to what extent respondents participate directly or indirectly in the underground economy. The survey approach has the advantage of providing information on who works in this sector, and what characterizes the jobs and the quality of work in this sector. In Norway, where the method was used to survey 900 representative individuals (Isachsen, Klovland and Strom, 1982), 20 percent of the respondents admitted to having worked in this sector, while 29 percent admitted to having purchased services in it. Moreover, 9 percent allowed to having purchased and offered services in this market. About 40 percent of the population (20 percent + 29 percent – 9 percent) thus had dealings, in one way or another, with this sector. Men and young people are in the majority, and men are three times more likely than women to engage in moonlighting. Overall, respondents rated the accessibility and the quality of the services as satisfactory. Using this method, it was estimated that about 10 percent of the labour force in Italy participated in the underground economy in 1975; the percentage may have been as high as 25 percent when individuals who worked in both the underground and official sectors were taken into account (Frey, 1978).

The second method entails comparing the official participation rates in several countries for a given period, or comparing corresponding rates at different periods. This method, like the previous one, only gives an idea of the percentage of individuals participating in the underground economy. It is founded on the hypothesis that the official participation rates fall when the underground economy experiences periods of growth. Such an hypothesis therefore assumes that a reference or “normal” rate of participation exists. Table 2-2 indicates the participation rates for the period 1960–76 in nine industrialized nations.

TABLE 2-2 Participation in the Labour Force (16 and over) in Different Countries (percentage)

Year	United States	Canada	Australia	Japan	France	West Germany	United Kingdom	Italy	Sweden
1960	60.2	56.2	—	67.9	60.0	60.7	58.0	—	—
1964	59.6	56.2	58.7	64.8	60.4	59.0	60.9	53.9	63.0
1965	59.7	56.5	59.1	59.1	59.7	58.7	60.9	52.8	62.8
1966	60.1	55.9	59.5	59.5	59.8	58.2	60.9	51.2	63.1
1967	60.6	57.3	59.8	59.8	58.9	57.0	60.6	51.2	62.2
1968	60.7	57.6	59.9	59.9	58.6	57.1	60.2	50.5	62.4
1969	61.1	57.9	60.2	60.2	58.3	57.1	59.8	50.1	62.3
1970	61.3	57.8	60.8	60.8	58.0	57.0	59.4	49.5	62.9
1971	61.0	58.1	60.7	60.7	57.7	56.5	59.1	49.2	63.2
1972	61.1	58.6	60.8	60.8	57.9	55.8	59.4	48.0	63.1
1973	61.4	59.7	61.1	61.1	57.8	55.4	60.8	47.9	63.0
1974	61.8	60.5	61.4	61.4	58.0	54.4	60.5	47.9	63.8
1975	61.8	61.1	61.6	61.6	58.7	53.5	61.0	47.8	64.9
1976	62.1	61.1	61.4	61.4	58.7	53.2	61.5	48.0	65.3

Source: U.S., Department of Labor, Bureau of Labor Statistics, 1982, *Monthly Labor Review* 105 (5): p. 69; U.S., Department of Labor, Bureau of Labor Statistics, 1979, *International Comparisons of Unemployment*, p. 42.

In the United States, Canada, Australia, the United Kingdom and Sweden, the participation rate increased between 1960 and 1976, whereas it dropped in Japan, France, West Germany and Italy. The decrease in Italy can apparently be attributed to the emergence of a thriving black market; in fact, entire residential neighbourhoods have been built by moonlighting workers (Del Boca and Forte, 1982). Canada experienced a period of stability between 1974 and 1977, following one of constant growth between 1960 and 1974, which can be explained by demographic changes in the country at that time. Applying the initial hypothesis that the countries whose underground economies experienced growth are those in which the participation rate declined over time would lead us to conclude that Canada is not among them. However, the results obtained in this manner give no indication of the importance of the underground economy in relation to the official one.

Another way to assess the scope of the underground economy is to study a country's demographic makeup. According to Del Boca and Forte (1982), it is possible to establish the profile of the type of individual who is likely to participate in parallel activities. These activities are broken down into two groups. On the one hand, irregular work attracts mainly unskilled labour (women, middle-aged men and adolescents); on the other, secondary work appears to attract highly educated men. However, this type of analysis presupposes that the behaviour of Italian wage earners corresponds to that of their counterparts in other countries.

PROBLEMS POSED BY THE METHODS

A comparison of participation rates in several countries does not take into account the economic situation and economic cycles, nor does it consider the demographic makeup and changes in it, which may vary among countries or among periods. Moreover, this type of comparison merely provides a broad assessment of the underground economy, since it only measures the degree of participation of individuals, not what they earn. It also disregards changes in productivity that may occur during the period in question.

The survey method makes it possible to obtain a better estimate of the income of those working in the underground economy, since these participants can be questioned directly. There is no guarantee, though, that they will agree to declare such income. The special problems of surveys will also persist, i.e., the time and resources required to collect data. Using this method, it is impossible to assess earnings, as individuals are not asked if they have worked in the underground economy and how much they have earned (it would, however, be possible to study this question). No mention whatever is made of the investments individuals may have made in this sector, nor the earnings they have derived from it.

Methods Based on Monetary Aggregates

DESCRIPTION

This category is the most important one in terms of the number of studies published and the degree of refinement of its methods. The methods are divided into three groups, which all share the common initial hypothesis that cash is the sole form of payment used in the underground economy. As a result, they imply a definition of the underground economy that is very similar to the one outlined in the introduction: all activities involve cash transactions, whether they are legal or not.

The first group of methods considers the amount of currency held by individuals and the distribution of the value of banknotes in circulation; the presence of a considerable number of notes of large denominations indicates an increased ease in effecting cash transactions. These methods can only reveal trends in an expanding or declining underground economy, as they are unable to measure its importance in relation to the gross national product. In the United States, the number of \$100 bills in circulation rose by 250 percent between 1966 and 1978, while the number of bills of all denominations increased by only 125 percent (Ross, 1978). In the United Kingdom, the number of £10 and £20 notes increased by 2,100 percent between 1967 and 1979, compared with an increase of 310 percent for all denominations (Macafee, 1980). The authors conclude that the underground economy must have absorbed the increase in the number of large bills. O'Higgins (1981) has pointed out, however, that the increased use of banknotes of intermediate value, due to an increase in the prices of legal transactions, would lead to an identical result without meaning anything in terms of the underground economy. Another aspect of the circulation of money examined in the past is the change in the amount of currency held by individuals relative to other assets such as M2 (or even GNP), though it does not appear that the amount of currency held has increased appreciably over the past 20 years.² Moreover, the rise in interest rates readily explains why individuals own more assets included in M2 than those included in M1.

The second group of methods is more common. It allows for a study of the changes over a given period in the ratio between money in circulation and deposits, which supposes that a spurt of growth in the underground economy will lead to a change in the ratio over time. Cagan (1958) mentioned this type of method it, although he did not use it. Gutmann (1977) and Feige (1979, 1980) employed it in the United States. These methods were subsequently used in many countries, based on three particular techniques.

Method Based on the Currency/Demand Deposit Ratio

This method is based on a hypothesis which holds that growth in the under-

ground economy can be detected through changes in the currency/demand deposit ratio. It is predicated on three assumptions. First, it assumes that there is a reference "currency/demand deposits" ratio. Gutmann (1977, 1979) chose the base period 1937–41 and he assumed there was no underground economy at that time. He established the ratio between currency and demand deposits for this period; the result obtained was considered a normal indicator which could only be made to fluctuate by the existence of underground activities. Second, this method assumes that there is a direct relationship between transactions concluded in the underground economy and cash payments, and eliminates barter and payments by cheque from the outset. Third, it assumes that the velocity of money is the same in both economies.³

The method based on the currency/demand deposit ratio consists of comparing the observed and "normal" levels of relative amounts of currency. The following example illustrates this method. Let us suppose that the "currency/demand deposits" ratio is 2 for the reference period, which we will call period 0. This index is the reference ratio which fluctuates only if an underground economy exists. Let us suppose that the "currency/demand deposits" ratio is 4 two years later; we will call this period 2. To measure the scope of the underground economy, we must first multiply the ratio by total demand deposits in the overall economy to obtain the demand for money attributable to the official and underground economies. Let us suppose that demand deposits total \$5 million. From this figure we must deduct the demand for money attributable to the official economy, which is indicated by official statistics, and which we will set at \$2 million. According to this example, the demand for money attributable to the official and underground economies is \$20 million for period 2 (\$5 million \times 4). Demand for money attributable to the official economy totals \$10 million (\$5 million \times 2). The underground economy accounts for the \$10 million discrepancy between the two. Let us multiply this amount by the velocity of money, in this example 10, and we arrive at \$100 million, representing all transactions associated with the underground economy.

Using this method, Gutmann (1977, 1979) was able to establish that in 1978 the underground economy in the United States represented about \$246 billion or 12 percent of the country's GNP. In Australia, where Gutmann's method was also employed, such activity was estimated to account for 10 percent of the GNP during the 1978–79 period. Klovland (1980) has shown that results obtained using Gutmann's method (or Feige's adaptation of it) will vary considerably according to the choice of the base period and hypotheses put forward respecting the velocity of money. According to the hypothesis selected in relation to these aggregates, the assessments vary from 6.4 to 16 percent of GNP for Norway in 1978, and from 6.9 to 17.2 percent for Sweden.

Method Based on the Transaction Ratio

The second method linked to the financial market is based on the constancy of the relationship between money and GNP, as suggested in the quantitative theory of money. According to this method, the number of banknotes in circulation reveals the overall scope of transactions that occur in the economy. It then suffices to subtract the value of transactions attributable to the official economy from this total to obtain the transactions that can be attributed to the underground one.

Here is an example to illustrate this method. Let us suppose that no underground activities occur in a reference year. Let us calculate the ratio of nominal transactions to the nominal GNP to obtain the normal ratio of transactions, and assume it is 10. This figure is then multiplied by the value of the U.S. GNP, i.e., \$75 billion, to obtain the total transactions associated with the official GNP. The amount thus obtained is \$750 billion. To calculate the total transactions corresponding to the overall economy, let us multiply the total demand deposits by the velocity, then add this amount to the amount of money in circulation multiplied by its velocity. Let us suppose that this figure is \$900 billion. The discrepancy (\$150 billion) corresponds to all transactions attributed to the underground economy. By dividing this amount by 10, we obtain the underground GNP, i.e., \$15 billion.

Using this method, Feige (1979) put the growth in the underground economy at 91 percent between 1976 and 1979, which is 22 and 32 percent of the official GNP, respectively. It also enabled him to conclude that, over a longer period of study, the underground economy decreased steadily between 1939 and 1968, especially during World War II. Consequently, in 1980 he altered his method of assessing velocity according to the longevity of paper money. He then estimated that the underground economy in the United States represented 27 percent of the GNP for 1979.

Method Based on the Demand For Money

Tanzi (1980) and Klovland (1980) have modified Gutmann's method by assessing the demand for money and establishing to what extent monetary forecasts differ from actual rates. Their results, like those of several other authors, underestimate the real demand for money. Such underestimates have been common over the last ten years, a phenomenon often referred to as "missing money." Bowsher (1980) attributes this underestimation to the growth of the underground economy since 1970; he points out that models should instead overestimate the demand for money because of institutional changes which have occurred in the meantime, such as the introduction of credit cards, high interest rates and so forth. The studies cited earlier employ the "currency/demand deposit" ratio as a basis for analysis. Table 2-3 outlines the assessments that were obtained for various countries and years, using monetary methods to analyze the underground economy.

**TABLE 2-3 Assessments for Various Countries
Using Monetary Methods**

Country	Year	Assessment (% of GNP)	Method Used	Source
United States	1968	5.8	currency/demand deposit ratios	Gutmann (1977, 1979)
	1970	6.2		
	1974	6.3		
	1976	11.0		
	1979	13.5		
	1976	22.0	transactions	Feige (1979)
	1976	2.4–5.1 (tax)	modified	Tanzi (1980)
		8.1–11.7 (level of tax)	currency/demand deposit ratio	
	1979	28.0	currency/demand deposit ratio	Feige (1980)
	1979	33.0	transactions	Feige (1979)
United Kingdom	1968	18.8	currency/demand deposit ratio	Dilnot and Morris (1981)
	1972	16.2		
	1977	7.5		
	1979	7.2		
	1979	15.0 (of GNP)	transactions	Feige (1980)
West Germany	1980	16.0–24.0	transactions	Langfeldt (1982)
Sweden	1978	6.9–17.2	modified currency/demand deposit ratio	Klovland (1980)

PROBLEMS POSED BY THE METHODS

The main problem with the monetary methods is that they assume that the only factors that can affect the holding of currency are the presence and growth of the underground economy. They do not take into account a number of important factors, such as the following:

- interest rates, the inflation rate and the risk of holding currency, all of which change the cost of holding currency relative to other means of exchange;

- the introduction of new monetary procedures, such as credit cards; and,
- changes in the relative use of money and demand deposits.

These studies are occasionally based on as yet unproven hypotheses. The following problems arise with regard to studies based on the currency/demand deposit ratio:

- Velocity, calculated as the ratio between the GNP and the number of banknotes in circulation, varies a great deal; this variation is questioned by certain economists convinced that velocity is stable in the long run.
- These methods, except the one based on the transaction ratio, do not take into account the most recent technological developments, which may have an effect on the relative holding of currency in either or both sectors of the economy.
- These models take for granted that the same ratio between currency and demand deposits not only exists in the underground economy as in the official one but also remains constant.
- The choice of reference periods is arbitrary, and the slightest change will alter the results obtained.
- Several authors consider only changes in the currency/demand deposit ratio. A number of them (Garcia, 1977; Laurent, 1979) believe that the use of such a ratio to analyze the underground economy may lead to erroneous conclusions, especially where there has been a reduction in demand deposits rather than an increase in currency. Consequently, the “currency/M2” ratio must be considered in order to take this contingency into account.

The method based on analyzing transactions, attributed to Feige, does not impose any restriction with respect to velocity, although it does not eliminate the problem posed by the reference period. There is another problem regarding using this method, since Wong and Rose (1980) have concluded that the quality of the data necessary is inadequate in Canada.

The method based on the demand for money, as applied by Tanzi, suffers partly from these problems, particularly from those related to the use of reference periods and the hypothesis concerning the exclusive use of currency in all underground transactions. However, this method is noteworthy since it makes it possible to determine precisely the “currency/M2” ratio; as a result, his estimates of the importance of the underground economy will be lower. It is interesting to point out that this method, when applied to the U.S. economy, may give results that are distorted by the international character of the U.S. dollar. Several countries, including the Bahamas, Bermuda, the Dominican Republic, together with numerous individuals around the world use American money in everyday transactions. Blades (1982) has noted this fact and underscored the danger of linking the value of U.S. currency in global circulation to the level of internal activity in the United States, because of the risk of overestimating the scope of the underground economy. This problem, however, does not apply to Canada.

Overall Evaluation of the Methods

The first two categories of methods, based on audits and on discrepancies between income produced and taxed, underestimate the underground economy because they do not include hidden income and barter. The methods that compare participation rates in the labour force include moonlighting and barter and should then result in higher estimates than the first two; however, they disregard capital gains. Monetary methods, on the other hand, should produce higher estimates as they include all transactions of a monetary nature. The variant that Feige derived from them should produce even higher estimates, since it also includes certain transactions effected by cheque.

Estimates based on the various methods produced the following results for the United States:⁴

- statistical discrepancies — 4 percent of the GNP (Park, 1981);
- audits — between 6 percent and 8 percent of the GNP (IRS, 1979); and
- monetary methods — 22 percent of the GNP (Feige, 1979).

The following section examines in detail the results obtained when these methods are applied to Canada.

Survey of Canadian Literature

The underground economy has been studied for some time in the United States and a number of European countries. In Canada, it is only recently that interest has been shown in the phenomenon; the first studies date from the second half of the 1970s.

Audit methods in particular have been used. For the 1978–79 fiscal year, Revenue Canada reassessed 12.8 percent of income tax returns filed by individuals and non-incorporated businesses for 1978, which enabled it to recover \$359 million.

Other studies of the underground economy are based primarily on monetary methods. All told, four studies attempt to analyze the phenomenon in Canada (Haas, 1978; Wong and Rose, 1980; Mirus and Smith, 1981; Ng and Karolyi, 1984). They are based on three methods: that of Gutmann, employed by Haas, Wong and Rose, and Mirus and Smith; that of Feige, used by Wong and Rose and Mirus and Smith; and that of Tanzi, employed by Mirus and Smith and Ng and Karolyi. The methods each used will be briefly described before discussing the estimates their methods produced.

Haas (1978) adopted the method Gutmann developed based on changes in currency/demand deposit ratios and concluded that the results were valid for Canada. He then introduced a variant, which entailed using the ratio between real per capita currency (deflated by the implicit GNP deflator) and demand deposits, rather than the ratio between total real

balances and demand deposits; he followed the changes in this new ratio, instead of considering changes in Gutmann's ratio. He has given no explanation for his method, which enabled him to estimate that the underground economy in 1977 represented \$24.8 billion, or 11.1 percent of the GNP.⁵ Wong and Rose (1980) have criticized this procedure; they feel that using the implicit GNP deflator to deflate nominal currency is unjustified, because households are the ones who decide how much currency they hold. They maintain that it is preferable to use the consumer price index. In addition, they argue that using per capita data distorts the analysis, especially during periods when the proportion of children relative to the overall population rises appreciably, because demand for currency comes from households, not children.

Wong and Rose (1980) have also applied Gutmann's method to Canada, concluding that currency linked to the underground economy has risen little. Moreover, their studies of the currency/demand deposits ratio reveal a downward trend that has prevailed throughout the 1970s, if the currency/personal chequing accounts ratio is employed. According to them, the currency/demand deposit ratio between 1953 and 1959 was 0.48, which represents the "normal" ratio. In 1976, the ratio noted was 0.60; in 1979, 0.62, representing increases of 23.7 and 28.6 percent, respectively. The authors maintain that the increase of currency in circulation can be thus attributed to the black market. However, they do not calculate what percentage of the GNP is represented by the underground economy. These results appear to corroborate Garcia's criticism (1977) that this trend with respect to deposits shows only that individuals are managing their assets better and that demand deposits are thus withdrawn when interest rates increase, as was the case during the 1970s.

Mirus and Smith (1981) too have used Gutmann's method for Canada; they estimate that the underground economy in 1976 represented \$31.3 billion, or 14 percent of the GNP. Using this method, they noted a constant increase in the GNP attributable to the underground sector, which corresponds to results obtained in the United States. Canadian estimates, however, are relatively higher than those for the United States, which may be justified by the existence of a more generous unemployment insurance program in Canada, as well as higher taxation rates on income and profits (Perry, 1980).

Wong and Rose (1980) also employ a variant of Gutmann's method (proposed by Laurent, 1979). It consists of using transfers of currency to demand deposits rather than the absolute values of both aggregates. They have noted that it is unlikely that the rate of growth of money has supported appreciable development in the underground economy.

The method developed by Feige has been used by Wong and Rose, on the one hand, and by Mirus and Smith, on the other. Wong and Rose maintain that it is impossible to apply this method directly to Canada, since the data indicating the proportion of financial transactions relative

to all transactions are unknown. Mirus and Smith exclude from their analysis the financial centres where most financial transactions occur — Montreal, Toronto, and Calgary — to circumvent this problem. According to their estimates, the underground economy in Canada thus represented 21.9 percent of GNP in 1976 and 19.1 percent in 1978.

The last method to be discussed in this section is that of Tanzi (1982). It relates the currency/M2 ratio to a number of variables, including certain taxation data (the ratio between the amount of income tax and employment income and capital less government transfers), the share of wages declared in income, and real per capita income, as indicated in national accounting. Using this new ratio, it is possible to determine what the currency/M2 ratio would have been had the tax burden remained lower than it is under current tax rates. By means of this method, Mirus and Smith (1981) have estimated that the underground economy attributable to the tax burden represented between 5 and 8 percent of the GNP measured for 1976.

Tanzi repeated Cagan's (1958) analysis; he, too, used the ratio between currency in circulation and M2, rather than M1, as several other authors have done, to avoid finding changes in the ratio that could only be attributed to changes in the makeup of deposits. If we adopt a broader aggregate, it is then possible to take into account all the substitution factors that are likely to affect the relative holding of currency; this proves to be particularly important for the 1973–80 period, when the increase in interest rates led to a shift from demand deposits to short-term investments.

Per capita real income is one of the variables Tanzi selected. Normally this variable is negative. Variables representing the composition of income and the opportunity cost related to the holding of money were also included in the analysis. The income composition variable takes into account the fact that wage earners and non-wage earners are paid by cheque or in cash, while holders of capital are generally paid by cheque. The higher the proportion of wages in the total income, the lower the proportion of interest and investment income: it will be harder to avoid paying taxes, while the demand for currency will remain high. Thus, this variable will usually be positive. To measure the opportunity cost related to the holding of currency, the interest rates on short-term 90-day investments and on savings accounts are used. Normally, these variables are negative. The taxation variable was the final one Tanzi used in his analysis, which enabled him to determine the extent of tax evasion. As long as the tax burden is moderate, tax evasion will not be extensive, although it will increase gradually as the tax burden rises. Consequently, heavy income tax may activate a black market in goods, in which payments are made as much as possible in cash. It can be assumed, then, that the relationship between the tax burden and the demand for currency for underground activities will be positive. We will employ Tanzi's variant, adopting the same assumptions he did as to whether the expected signs of the variables are negative or positive.

Ng and Karolyi (1984) have developed a variant of Tanzi's equation.

They excluded the wage variable, since they reject the hypothesis that most wages are paid in cash in Canada. However, their variant appears to contradict Tanzi's analysis (1982, pp. 75–76). Ng and Karolyi have also broken down the per capita income variable into its two components: disposable personal income and population. They have also added two complementary variables to take into account the 1972 and 1977 changes in the structure of marginal tax rates. The period covered by their estimate extends from 1968 to 1982; data are provided for each quarter according to a logarithmic formula. Their estimates for 1982 vary between 12 and 16 percent of the GNP, according to the precise composition of the demand-for-money function selected. They have employed an average taxation variable which proves to be insignificant. It would be more logical to use a marginal taxation variable.

TABLE 2-4 Estimates of the Underground Economy in Canada for 1976

Method	\$ billions	% of Economic Activity	Reference Period
Gutmann	31.3	14	1937–39
Feige	53.7	22	1939
Tanzi	9.6–14.9	5–8	1936

Table 2-4 indicates the various assessments of the underground economy that have been obtained using the above methods. The estimates oscillate between 5 and 20 percent of overall economic activity. The assessment using Tanzi's method is the most plausible, although it does not avoid certain problems, such as the choice of a reference period and hypotheses respecting the constancy of velocity and its similarity in the official and underground sectors.

New Estimates for Canada

The purpose of this section is to present estimates of the underground economy in Canada, based on two types of methods which have never been employed here: methods based on discrepancies between income as established in national accounting and in taxation data; and methods based on monetary analysis.

Analysis Based on Discrepancies

These methods can evaluate the income hidden from tax authorities. Indeed, they can estimate tax evasion, although they disregard illegal transactions that are not accounted for in calculations respecting national output. Table 2-5 presents rough comparisons between the gross national income (GNI)

according to market prices as reported in national accounting and income declared to tax authorities. The discrepancy provides an estimate of tax evasion.

TABLE 2-5 Comparison of National Output in Canada and Income Declared to Tax Authorities (\$ millions)

Year	GNP at Market Prices (1)	Income Declared by Individuals ^a (2)	Income Declared by Corporations ^b (3)	Discrepancy	
				between (1) and (2) + (3) (4)	Ratio (4)/(1) (5)
					(%)
1969	79,185	46,467	9,900	23,448	29.4
1970	85,685	50,825	8,786	26,074	30.4
1971	94,450	55,016	10,665	28,779	30.5
1972	105,234	66,249	11,911	27,074	25.7
1973	123,560	77,752	17,253	28,555	23.1
1974	147,528	94,785	22,628	30,115	20.4
1975	165,343	110,704	22,220	32,419	19.6
1976	191,031	127,295	23,000	40,736	21.3
1977	208,868	139,879	24,238	44,751	21.4
1978	230,490	157,013	31,324	42,153	18.3
1979	264,279	177,341	43,584	43,354	16.4
1980	297,556	202,513	48,993	46,050	15.5
1981	339,797	233,994	46,700	59,103	17.4

Sources: Cansim Series, no. D30013; Revenue Canada Taxation, *Taxation Statistics*, 1971-83 editions; Statistics Canada, *Corporation Taxation Statistics*, 1970, 1979 and 1981, cat. no. 61-208.

- a. By individuals, we mean all taxpayers who complete the Revenue Canada T1 income tax return.
- b. Statistics related to corporations are based on income tax returns submitted to Revenue Canada Taxation, which includes all corporations completing T2 tax returns. Corporations with less than \$500 in taxable income have been excluded, since they are considered inactive, as have savings and credit cooperatives and insurance companies. However, non-taxable corporations, such as charitable organizations, are included. Declared income is pretax accounting income.

Tax evasion assessed in this manner appears to decrease between 1969 and 1979, falling from nearly 30 percent at the outset to 14 percent at the end. According to Revenue Canada, this reduction can be explained by the increasingly harsher treatment of offenders by the courts. Certain amendments to the Income Tax Act passed during this period may also explain the results. Old age pensions became taxable in 1972, and between 1971 and 1972 the share of income declared to tax authorities in relation to national income increased appreciably. In 1974, family allowances and unemployment insurance benefits also became taxable. In 1978, refundable child tax credits were introduced. All of these factors have contributed to increasing the rate of income coverage by tax authorities.

INDIVIDUALS

Income

If we repeat the analysis for individuals, we obtain the figures presented in Table 2-6. The percentage of income that individuals declare to tax authorities is high relative to income accounted for by Statistics Canada, and it rose steadily between 1964 and 1979.

TABLE 2-6 Comparison of Declared Personal Income and Income Entered in the National Accounts, Canada (\$ millions)

Year	Personal Income and Expenditures in Current Dollars (1)	Total Income Declared, in Current Dollars ^a (2)	Discrepancy between (1) and (2) (3)	Ratio (2)/(1) (4)
				(%)
1964	37,398	26,978	10,420	72.1
1965	41,031	30,049	10,982	73.2
1966	46,250	34,249	12,001	74.0
1967	50,484	37,837	12,647	74.9
1968	55,417	41,780	13,637	75.4
1969	61,815	46,467	15,348	75.2
1970	66,725	50,825	15,900	76.2
1971	74,157	55,016	19,141	74.2
1972	83,718	66,249	17,469	79.5
1973	97,845	77,752	20,093	79.5
1974	117,367	94,785	22,582	80.8
1975	136,091	110,704	25,387	81.3
1976	155,175	127,295	27,880	82.0
1977	171,550	139,879	31,671	81.5
1978	191,718	157,013	34,705	81.9
1979	215,659	177,341	38,318	82.2
1980	245,049	202,513	42,536	82.6
1981	257,087	233,994	23,093	81.5

Sources: Statistics Canada, *National Income and Expenditure Accounts*, 1968–82, cat. no. 13-201; Revenue Canada Taxation, *Taxation Statistics*, 1966–83.

a. These figures include taxable and non-taxable returns.

If these results are broken down into employment categories for 1969 and 1979 to determine in which sectors individuals are most likely to avoid tax, we obtain the figures in Table 2-7. An analysis of these results reveals two important points: the rate of declaration of income to tax authorities is increasing in all sectors; and the individuals least likely to avoid tax are wage earners, business people — mainly owners of small businesses — and farmers. Farmers, however, create certain problems for national accounting with respect to imputations for food self-sufficiency. These problems no doubt explain the result obtained here if the sector’s contribution to the GNP is underestimated. According to Table 2-7, the taxpayers most likely to avoid paying taxes appear to be the owners of private capital.

TABLE 2-7 Comparison of Income Declared to Tax Authorities and National Income Attributed to Individuals and Non-Incorporated Businesses by Sector of Activity (\$ millions)

Sector of Activity	1969		1979		1969		1979	
	National Income (1)	Declared Income (2)	National Income (3)	Declared Income (4)	Discrepancy between (1) and (2) (5)	Ratio (2)/(1) (6)	Discrepancy between (3) and (4) (7)	Ratio (4)/(3) (8)
Farming Business ^a	1,435	808 1,919	4,354 10,387 ^c	3,518 6,140	627 1,809 ^c	56 65	836 - 106	81 100
Self-employed Wage Earners	43,841	1,459 39,182	145,599	4,353 139,069	4,659	89	6,530	95
Income from Private Assets	4,848	1,995	23,214	13,925	2,853	41	9,289	60
Pension Income ^b	6,396	1,105	27,289	10,336	5,291	17	16,953	38
Total	61,707	46,467	210,843	177,341	15,240	75	33,502	84

Sources: Statistics Canada, *National Income and Expenditure Accounts*, 1964-78 and 1980, pp. 18-19, cat. no. 13-201; Revenue Canada Taxation, *Taxation Statistics*, 1971 and 1981.

a. These figures include fishermen.

b. These figures include the income of unclassified individuals, i.e., alimony recipients, hunters, trappers, guides, and employees of individuals or farmers.

c. These figures include both business and self-employed.

The case of pensioners can probably be explained by the fact that many of them have low incomes and do not file income tax returns.

Number of Taxpayers

Another way to assess tax evasion entails comparing the number of returns filed by individuals and non-incorporated businesses with the size of the labour force to establish the percentage of individuals filing an income tax return. Table 2-8 presents this comparison.

TABLE 2-8 Comparison between the Labour Force and the Number of Individuals Filing a T1-Income Tax Return, Canada (millions)

Year	Number of returns filed (1)	Owners of Portfolios and Buildings (2)	Pensioners (3)	Real Number of Returns (4)	Labour Force (5)	Discrepancy between (4) and (5) (6)	Ratio (6)/(1) (7)
							(%)
1966	7,733	263	207	7,263	7,493	- 230	- 3
1967	8,134	283	250	7,601	7,747	- 146	- 2
1968	8,495	333	302	7,860	7,951	- 91	- 1
1969	8,882	387	360	8,135	8,194	- 59	- 1
1970	9,183	429	427	8,327	8,395	- 68	- 1
1971	9,533	454	487	8,592	8,639	- 47	0
1972	10,382	480	634	9,268	8,897	371	4
1973	11,004	496	730	9,778	9,276	502	5
1974	11,602	575	809	10,218	9,639	579	5
1975	12,002	577	876	10,549	9,974	575	5
1976	12,343	614	960	10,769	10,206	563	5
1977	12,586	644	966	10,976	10,498	478	4
1978	14,320	843	1,091	12,386	10,882	1,504	10
1979	14,682	989	1,125	12,568	11,207	1,361	9
1980	14,765	1,093	934	12,738	11,522	1,216	8
1981	15,179	1,285	952	12,942	11,830	1,112	7

Sources: Revenue Canada Taxation, *Taxation Statistics*, 1969-83; Statistics Canada, *Historical Labour Force Statistics*, cat. no. 71-201.

The number of pensioners and owners of portfolios is subtracted from the total number of taxpayers who have filed a personal income tax return, and the resulting figure is then compared with the labour force. As of 1972, the discrepancy becomes positive and increases constantly. The same factors as those outlined in the analysis of personal income help explain the substantial increases in the coverage of income by tax authorities in 1972 and 1978, i.e., taxation of old age pensions, family allowances and unemployment insurance benefits, as well as the introduction of refundable child tax credits.

As we noted earlier, the main problem posed by these methods is that they disregard the fact that certain individuals do not file a tax return because their income is too small. Thus tax evasion is overestimated. We will therefore attempt to assess this group of individuals. The method entails finding the number of individuals whose income falls below the point at

which tax is payable. To do so, we will compare the number of persons who have filed an income tax return, according to Revenue Canada taxation statistics, with the total population. The discrepancy will indicate the number of persons with income who do not appear in taxation statistics but who should be added in, if we wish to compare the national income with the amount of declared and undeclared income by eliminating cases which do not constitute tax evasion. Table 2-9 modifies the amounts declared to tax authorities presented in Table 2-6 to take these individuals into account.

TABLE 2-9 Comparison between National Income of Individuals and Non-Incorporated Businesses, and Modified Taxation Statistics, Canada (\$ millions)

Year	Income	Declared Income	Undeclared Income	Declared and Undeclared Income as a Percentage of National Income
1975	136,091	110,704	576	82
1979	211,140	177,341	759	84

Sources: Statistics Canada, *System of National Accounts*, annual estimates, 1964-79, cat. no. 13-201; Revenue Canada Taxation, *Taxation Statistics*, 1977 and 1981.

The correction made to take into account undeclared income falling below the point at which income is taxable hardly changes the results. For 1975, assessments of tax evasion among individuals drop from 18.7 to 18 percent of declared income, and for 1979 from 17.8 to 16 percent.⁷

CORPORATIONS

It is also possible to analyze statistics for corporations, by sector of activity, to compare gains declared to tax authorities with income reported in national accounting. Table 2-10 presents these results.

The ratio between declared income and income entered in the national accounts varies considerably more among corporations than individuals. In certain sectors the ratio is only 10 percent, but it reaches 100 percent in others. It is also interesting to note that the share of declared income appears to decrease over time, from 75 to 70 percent; the opposite is true among individuals (75 to 84 percent). The sectors most concerned with filing accurate returns seem to be lumbering, fishing and mining; the construction, agriculture and public utilities sectors are those in which the percentage of undeclared income is the highest. Agriculture poses a special problem, as part of the income imputed to farmers in national accounting has not actually been earned.

To conclude, the underground economy, assessed using methods based on discrepancies, does not appear to have grown between 1970 and 1978.

TABLE 2-10 Comparison between Corporations' Declared Income and Income Entered in the National Accounts, Canada (\$ millions)

Sector of Activity	1970		1978		1970		1978	
	National Income (1)	Declared Income (2)	National Income (3)	Declared Income (4)	Discrepancy between (1) and (2) (5)	Ratio (2)/(1) (6)	Discrepancy between (3) and (4) (7)	Ratio (4)/(3) (8)
						(%)		(%)
Agriculture	245	25	705	280	220	10	425	40
Lumbering	20	25	79	111	-5	100	-32	100
Mining	1,205	1,197	3,834	4,810	8	99	-976	100
Manufacturing	3,231	2,850	11,294	10,170	381	88	1,124	90
Construction	413	226	1,602	965	187	55	637	60
Transportation	535	409	1,540	1,364	126	76	176	89
Warehousing	32	19	115	86	13	59	29	75
Communications	506	387	1,109	997	119	76	112	90
Public Utilities	923	159	4,068	428	764	17	3,640	10
Wholesale Trade	748	596	2,945	2,205	152	80	740	75
Retail Trade	559	501	2,023	1,538	98	84	485	76
Finance	2,579	1,907	12,793	6,649	672	74	6,144	52
Government,								
Personal and								
Miscellaneous	525	339	2,401	1,722	186	65	679	72
Services								
Total	11,561	8,640	44,508	31,325	2,921	75	13,183	70

Source: Statistics Canada, *National Income and Expenditure Accounts*, 1964-78, cat. no. 13-201, pp. 38-39; Statistics Canada, *Corporation Taxation Statistics*, 1970 and 1979, cat. no. 61-208.

Analysis Based on Monetary Aggregates

Most studies on the underground economy undertaken up until now have sought to assess its scope. However, there are a few exceptions, including Tanzi's (1980) study, which attempt to determine the factors that explain the existence of the phenomenon in the United States and to assess the role played by taxes in particular. The underground economy in Tanzi's study is assessed according to the value of cash transactions. The transactions are determined by the discrepancy between the current level of taxation and the level in effect during the reference period. This analysis is carried out using a slightly modified version of the demand-for-money function developed by Cagan (1958). The latter noted the factors determining the relative holding of money in relation to M2. These factors include the opportunity cost related to the holding of money (determined by interest rates), real per capita income, the volume of per capita retail sales, the extent of per capita travel, the degree of urbanization, and the income tax rate. Cagan then rejected variables related to travel, urbanization and retail sales because of their overly close correlation to income; he kept the real income variable only for the purpose of the analysis.

One problem these methods raise is the choice of the appropriate taxation variable.⁷ The following analysis will employ such a variable using personal income less transfers as a denominator to take into account tax on earned income. A second taxation variable which can also be used is the maximum marginal tax rate, which helps isolate trends in the entire marginal rate structure. The principal problem in using this variable is that it only enables us to establish the opportunity cost of tax evasion for a very limited number of individuals. Both variables are expected to have a positive sign. Other taxation variables used in the following empirical analysis are explained in Appendix B. The functional form selected is logarithmic. The adjustment process adopted is of the instantaneous type.⁸ The logarithmic form directly provides the elasticity of the dependent variable in relation to each of the independent ones.

The analysis produced the following results: a 1 percent increase in the average marginal tax rate leads to a 1.75 percent increase in the relative holding of currency. The change in the currency/M2 ratio can then be explained to a large extent by a few variables. There is also an important, positive relationship between the marginal tax rate and the relative demand for currency. Underlying the model is this hypothesis: an increase in the holding of currency indicates that a high number of incomes are being paid in cash and that there is a greater opportunity to avoid paying taxes. Such a hypothesis appears to be corroborated empirically.

Once the underground economy has been estimated using the taxation variable, it is possible to assess the entire sector's importance in the following manner. First, we must determine the amount of currency held for illegal purposes and then multiply this amount by the ratio between the

measured GNP and currency held for legal purposes to obtain the underground GNP. According to the hypothesis which led to this reasoning, the velocity of money is the same in both sectors of the economy. At this point, however, it is interesting to note one of the problems of this analysis: given the close correlation between the marginal tax rate and income, it is possible that the effect attributed to the first variable is actually attributable to the second. As a result, according to Cox (1984), the only conclusion which can be drawn from this analysis is that the importance of the underground economy is a function of income. This argument does not seem well founded; what encourages people to participate in the underground economy is the increase in their income but not the consequent increase in their tax rate.

Table 2-11 presents a synthesis of the results obtained using these methods. It appears to indicate that the underground economy was stable between 1973 and 1981.

TABLE 2-11 Estimates of the Underground Economy and Tax Fraud, Canada, 1973-81 (\$ millions)

Year	Illegal Trans- actions ($\hat{C}_t - \hat{C}_l$)	Legal Transactions	Velocity of Money in Both Sectors %	Underground Economy		Tax
				dollars	% GNP	Evasion
1973	904	13,331	9.28	8,389	6.0	1,225
1974	1,032	14,549	10.14	10,464	7.1	1,517
1975	1,193	16,554	9.99	11,918	7.2	1,680
1976	1,297	17,874	10.69	13,865	7.3	1,941
1977	1,634	19,374	10.78	17,614	8.4	2,395
1978	1,673	21,317	10.81	18,085	7.8	2,333
1979	1,870	24,226	10.80	20,196	7.7	2,706
1980	1,174	24,226	12.05	14,147	4.8	2,186
1981	1,481	25,256	13.12	19,431	5.9	3,064

Source: Calculations by the author.

Conclusion

Estimates of the underground economy in Canada vary appreciably according to the method employed and thus should be used cautiously. It is worth noting that the methods have been developed for different purposes. Some assess tax evasion; others determine cash transactions rather than other means of payment; still others assess the participation of certain categories of individuals in the underground economy. All these methods have been described here because they are found in the literature, not because they have been judged satisfactory. Monetary methods (especially Tanzi's variant) appear to be more promising than the others, since they provide some indication of why the underground economy exists. Thus, for Canada, a value for the underground economy equivalent to between 5 and 8 percent of the GNP appears reasonable.⁹

Appendix A

The Relationship between the Underground Economy and Taxes

The equation used by Tanzi (1980) enables us to establish a demand for money which takes the following form:

$$(C/M2)_t = a_0 + a_1 T_t + a_2 WS_t + a_3 RPP_t + a_4 R_t + U_t$$

where

C_t = money outside banks;

$M2_t$ = demand deposits and money outside banks and interest-bearing savings deposits;

T_t = taxation variable;

WS_t = share of wages in personal income;

RPP_t = real per capita income from national accounting; and

R_t = interest rate.

Table 2-A1 presents the results obtained using similar equations as they apply to Canada, where variable T_t may have four values (see Appendix B for the sources and detailed description of calculations that led to determining these values). The other sources are as follows:

- money outside of banks — Cansim Series, No. B1604;
- M2 — Cansim Series, No. B1621
- share of wages in personal income — Cansim Series, Nos. D31255 and D31264;
- real per capita income from national accounting — Cansim Series, No. D31234, and
- interest rates — Cansim Series, Nos. B14018 and B14035.

The most important explanatory variable is real per capita income (RPP), whose sign is always as expected and statistically significant three times out of four. The constant is always positive and is statistically significant two times out of four.

The share of wages in the personal income variable (WS) is almost always positive, although it is statistically significant in only one instance. This result appears to indicate that most non-wage earners are remunerated in cash rather than by cheque, such as in the agriculture and mining sectors.

TABLE 2-A1 Results of the Regression of the Equation for the Period 1968-81 with Interest Rate on Term Deposits

Equation	Constant	WS	RPP	R	IT	MOY	MARG	MAXT	$\frac{R^2}{N}$	DW
(1)	0.3093 (0.1465)	0.9169 (0.4795)	-0.1843 (-0.3831)	-0.1561 (-1.8560) ^b	0.1842 (0.5744)				0.5058 14	1.6860
(2)	2.9338 (1.3615)	1.1311 (0.6921)	-1.1545 (-1.6970) ^c	-0.0518 (-0.6029)		-0.8946 (-1.5268) ^c			0.4798 14	1.4850
(3)	11.6986 (6.1515) ^a	-0.6618 (-0.8399)	-0.9752 (-6.7457) ^a	-0.2137 (-7.7213) ^a		1.3221 (7.3373) ^a			0.9693 14	2.5014
(4)	9.3384 (2.0788) ^b	4.0098 (1.9476) ^b	-0.9224 (-2.3665) ^b	-0.0775 (-0.8622)			-0.6971 (-2.3561) ^b		0.8542 14	2.1838

Source: Estimates by the author.

Notes: Student's statistics (*T*) appear in parentheses.

All equations have been corrected for the first-order autocorrelation using the Cochrane-Orcutt method.

a. Significant at the 1 percent level.

b. Significant at the 5 percent level.

c. Significant at the 10 percent level.

TABLE 2-A2 Results of the Regression of Equation for the Period 1968-81 with Interest Rate on Savings Accounts

Equation	Constant	WS	RPP	R	MARG	MAXT	$\frac{R^2}{N}$	DW
(3')	18.3904 (14.7794) ^a	1.9903 (3.7393) ^a	-1.7514 (-17.2161) ^a	-0.8651 (-11.0291) ^a	1.6567 (12.8123) ^a		0.9840 14	2.2011
(4')	18.2665 (5.0695) ^a	5.8966 (4.3120) ^a	-1.2920 (-6.2672) ^a	0.2008 (0.6599)		-1.1109 (-4.2370) ^a	0.8941 14	2.6367

Source: Estimates by the author.

Notes: Student's statistics (*T*) appear in parentheses.

All equations have been corrected for the first-order autocorrelation using the Cochrane-Orcutt method.

a. Significant at the 1 percent level.

The interest rate variable is always negative, although it is statistically significant in only two cases.

With respect to taxation variables (T_t), the average variables (IT and MOV) have little effect, while marginal variables ($MARG$ and $MAXT$) behave strangely. The marginal tax rate does indeed have a positive sign and is statistically significant, while the maximum marginal rate is negative, although it too is statistically significant.

Table 2-A2 presents the two last equations of Table 2-A1, 3 and 4, this time with another interest rate variable, i.e., the rate paid by chartered banks on savings accounts with chequing privileges. With regard to the value of R^2 , one notes that this new variable improves the explanatory power of both equations.

A more detailed examination of both equations reveals an interesting paradox: the marginal tax rate has a positive effect on the underground economy while the maximum marginal rate has the opposite effect. Theoretically, the average marginal rate is known to be more representative of the benefits derived from tax evasion than the maximum rate, for two reasons: first, because the maximum marginal rate only affects a small percentage of the population; and second, because the rate can be modified without affecting the structure of all marginal rates. For both reasons, we will use equation 3 in which the tax variable corresponds to the average marginal rate. The equation we will interpret reads as follows:

$$\ln(C/M2)_t = 12.3907 + 1.9903 \ln WS_t - 1.7514 \ln RPP_t - 0.8651 \ln R2_t + 1.6567 \ln MARG_t + E_t$$

where

$$\begin{aligned} \text{constant} &= a(1-P), P = -0.4842, a = 12.3907; \\ R^2 &= 0.98; \text{ and} \\ DW &= 2.20. \end{aligned}$$

The anticipated and real values of the ratio ($C/M2$) can be compared for both years. Current levels are directly indicated by the statistics:

$$\begin{aligned} C^{70} &= 3.272 \text{ million,} \\ C^{80} &= 9.443 \text{ million.} \end{aligned}$$

Expected levels are obtained in the following way:

$$Z = C/M2;$$

$$Z = (C/M2)_t = \ln \hat{C}_t - \ln M2_t$$

where

$$\ln (\hat{C}_t) = \ln M2_t + Z_t$$

and

$$\hat{C}_t = \exp (\ln M2_t + Z_t)$$

which give us

$$\begin{aligned}\hat{C}^{70} &= 3.271 \text{ million,} \\ \hat{C}^{80} &= 9.445 \text{ million.}\end{aligned}$$

The forecasting error is therefore

$$\begin{aligned}(C - \hat{C})^{70} &= 1 \text{ million,} \\ (C - \hat{C})^{80} &= 2 \text{ million.}\end{aligned}$$

Let us now examine the expected values of currency where the taxation level remained at its minimum level, prevalent in 1968, throughout the entire period:

$$\begin{aligned}\hat{\hat{C}}^{70} &= 3.271 \text{ million; consequently } (\hat{C} - \hat{\hat{C}})^{70} = 0^{10}, \\ \hat{\hat{C}}^{80} &= 8.271 \text{ million; consequently } (\hat{C} - \hat{\hat{C}})^{80} = \\ &1.174 \text{ million.}\end{aligned}$$

These figures reveal that 14.2 percent of money demanded (M2) in 1980 was required for underground activities fostered by the increase in marginal tax rates. To assess the portion of the underground economy attributable to individuals and tax evasion for 1980 as a percentage of the GNP, it is now sufficient to multiply the value of illegal transactions (*IM*) by the velocity of legal money (*VM*), defined by the ratio between the GNP and legal money (which is defined by M1 to take into account the fact that legal transactions may be effected using cash or cheques). Thus, we obtain an assessment of the underground economy for 1980 which is equivalent to 5 percent of the GNP. Table 2-11 presents the results obtained for the 1972-81 period using this method.

Appendix B

Taxation Variables

This appendix presents calculations carried out to obtain the taxation variables used and indicates the sources of the data employed.

$$1. IT = \frac{\text{personal income tax paid to the federal government}}{\text{personal income} - \text{government transfers}}$$

Source: Cansim Series, Nos. D30623 (numerator); D31264, D31260 (denominator).

$$2. MOY = \text{Average tax rate} = \frac{\text{personal income tax paid to the federal government}}{\text{declared income}}$$

Source: Revenue Canada Taxation, *Taxation Statistics*.

$$3. MARG = \text{average marginal tax rate.}$$

- The average income is the total income before deductions declared to federal tax authorities, divided by the number of persons who have filed an income tax return.
- The combined federal and provincial marginal tax rate corresponding to average income is then calculated. (Ontario's rate is considered representative of the other provinces' rates.)

Source: Revenue Canada Taxation, *Taxation Statistics*; Canadian Tax Foundation, *The National Finances*.

$$4. MAXT = \text{combined (federal and provincial) maximum marginal rate stipulated in the Income Tax Act.}$$

Source: Canadian Tax Foundation, *The National Finances*.

Notes

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1. For example, Sir William Pile, the president of the Inland Revenue Service in the United Kingdom, estimates that the underground economy could account for about 7.5 percent of the country's GNP.

2. M2 and M1 are measurements of the amount of money in circulation; M1, which is more widely used, includes money outside of banks and demand deposits, while M2 also includes interest-bearing savings deposits.
3. The velocity of an asset is defined as the number of times the asset changes hands during a given period (usually one year).
4. It should be noted that the results obtained using methods based on labour market data cannot be compared with those obtained by employing other methods because they are not expressed in the same way, i.e., as a percentage of the GNP.
5. This value was calculated for the fourth quarter of 1977.
6. The comparison is made between column (4) of Table 2-6 and column (4) of Table 2-9.
7. Cagan (1958) and Macecish (1962) have suggested using the ratio between the total taxes collected and personal income. However, employing this variable creates three problems: (1) the numerator represents tax collected rather than potential tax; (2) the ratio itself is reduced by the existence of tax evasion, which means it is endogenous; (3) the ratio may well not be affected by changes in the tax structure when the numerator and denominator both change in response to such a modification in taxes.
8. There are two adjustment procedures. The first supposes an instantaneous adjustment. The second supposes a stock adjustment procedure which, by adding the lagged dependent variable as the independent variable, enables us to consider that the adjustment to the optimal holding of money is not necessarily instantaneous. However, the results indicate that this procedure would not improve the explanatory power of the model in any way, and we are therefore not presenting the results that include this adjustment. From a theoretical point of view, this type of adjustment is more fully justified when data are given on a quarterly basis rather than an annual one, as is the case here.
9. Feige and McGee (1983), for example, use assessments of the underground economy to estimate a Laffer curve and make recommendations to governments regarding the policies they should adopt. This practice is not without risks, given that the estimates are mediocre.
10. This result can be explained by the fact that 1970 was the reference year. Therefore, by assumption, there was no underground economy.

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The Incidence of Government Expenditures and Taxes in Canada: *A Survey*

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Two questions have always been asked about the role of government in society. Who benefits from government expenditures? Who pays the taxes? In an era of slower growth rates in personal incomes and growing skepticism about the role of government in society, these questions are being raised more frequently and with greater vigour.

Since World War II, government spending and taxation have increased enormously, both in absolute terms and in relation to the value of total output.¹ Government expenditures as a percentage of gross national expenditures (GNE) have increased from 24.2 percent in 1951 to 47.4 percent in 1982.² The composition of government spending changed over this period, with transfers to persons and interest payments on the public debt accounting for an increasing proportion of total government expenditures. Since transfers and interest payments redistribute purchasing power in the economy but do not lead to the absorption of resources by the public sector, “exhaustive” expenditures by government have not increased as rapidly as total spending. Growth in government revenues has accompanied the growth in expenditures, although at a slightly lower rate. The composition of government revenues has changed over the postwar period, with a marked decline in the share of tax revenues from direct taxes on corporations and a more moderate decline in the share from indirect taxes to the point that direct taxes on persons constitute the largest source of revenues.

Broadly speaking, increased spending by government was widely regarded in the 1950s and 1960s as promoting greater equality of opportunity and a more equitable distribution of income. Disenchantment with this view of government seems to have set in during the 1970s. There are undoubtedly many reasons why the proponents of a large and growing public sector have dwindled in number and become less vocal, but one reason may be that studies of the burden of taxation and the benefits of government

expenditure across income groups — fiscal incidence studies — have indicated that the public sector has not contributed in a significant way to greater equality in the distribution of income. The current conventional wisdom, as expressed by Gillespie (1980a, p. 173), is that “in Canada, at least, a larger state has not led to a more egalitarian state.”

This paper summarizes the results of the fiscal incidence studies of Gillespie, Maslove, Dodge and others that may have contributed to the view that government expenditures and taxation have not significantly reduced the degree of income inequality in Canada. It also discusses recent studies which make clear that the redistributive effect of government is not a settled issue. This includes discussion of the conceptual and methodological issues that arise in tax and expenditure incidence studies. A survey of the most important empirical studies on the incidence of taxes and expenditures in Canada is presented, followed by the conclusions that can be drawn from these studies.

Conceptual and Methodological Issues

A survey of the empirical studies of the distributional effects of government expenditures and taxation should begin by discussing the thorny conceptual and methodological issues involved. An appreciation of these issues is necessary for the reader to judge the validity of the conclusions reached in these studies. The first issue that must be addressed is what questions such studies are expected to answer. The typical incidence study collects data on the distribution of labour and capital income. This may be called the pre-fisc distribution, that is, incomes received before taxes. Assumptions about the distribution of the burden of taxation and the benefits of government expenditures by income class are applied in order to impute a new income distribution, which is called the post-fisc distribution, or income plus government expenditures and transfer payments minus taxes. The pre-fisc and post-fisc distributions of income are then compared. The main issue to be examined is what conclusions can be drawn from comparing the pre-fisc and post-fisc distributions of income. Specifically, can incidence studies answer the question of how government has altered the distribution of income in a society?

Whether fiscal incidence studies can answer this question is a controversial issue. For example, Gillespie (1980b) vigorously defends the affirmative position, while others, such as Reynolds and Smolensky (1977), and Bird (1980) hold the negative view. This issue has two aspects. First, is absence of government the appropriate counterfactual? Second, can the impacts of government expenditures and taxes on the distribution of labour and capital incomes be neglected in interpreting the difference between the pre-fisc and post-fisc distributions as capturing the entire effect of government on the distribution of income?

With regard to the first issue, in my view it is not credible to maintain that the pre-fisc distribution of income approximates the distribution of income that would occur in the absence of government. A basic function of government is the establishment and enforcement of a system of property rights. In the absence of property rights, the distribution of income would be completely altered, with capital income being radically reduced if not completely eliminated. However, changes in the share of total income composed of capital would be nothing compared with the absolute declines in all incomes for, as Adam Smith notes in *The Wealth of Nations*:

The acquisition of valuable and extensive property . . . necessarily requires the establishment of civil government. Where there is no property, or at least none that exceeds the value of two or three days' labour, civil government is not so necessary.

Since all Canadians own property in one form or another that greatly exceeds the value of what could be produced in two or three days, in what Adam Smith describes as "that early and rude state of society which precedes both the accumulation of stock and the appropriation of land . . .," it is impossible to maintain that the pre-fisc distribution of income can be used to appropriate the income that would be generated in our society in the absence of government.

Even if the pre-fisc approximated the "no government" distribution of income, the assumption that taxes and expenditures by government have no effect on the distribution of labour and capital income remains a problem. This issue is discussed in greater detail below. However, for the moment, note that Gillespie defends the neutrality assumption by arguing that it could be the outcome, under the right assumptions about the characteristics of government expenditures and private production and consumption, produced by a general equilibrium model of the economy. This is correct as far as it goes. That neutrality could result from a general equilibrium analysis cannot be denied, but it is up to the proponents of this view to argue that the assumptions necessary to generate a neutrality result are reasonable, given our knowledge about the characteristics of the economy and government expenditures and taxes.

In my view, the question of how government has altered the distribution of income cannot be answered satisfactorily. A much more fruitful approach is to examine the distributional effects of marginal changes in government expenditures and taxation. In these cases, our knowledge of the reaction of the economy and the resulting change in the distribution of income may be reasonably accurate. Moreover, most government policy decisions are "marginal" decisions. Therefore, marginal incidence studies are the most accurate and relevant.

Do the comprehensive incidence studies contribute anything to our understanding of public policy? Two important contributions are evident. First, the post-fisc distribution of income provides the most comprehensive

measure of the degree of inequality of income (or command over resources) that is available. Analysis of the post-fisc distributions over time and comparisons across countries provide an important source of information regarding trends in income inequality. Second, as Reynolds and Smolensky (1977) argue, changes in the difference between pre-fisc and post-fisc distributions of income may indicate whether government budgetary policy is promoting more or less inequality in the distribution of income over time. Although this interpretation of the trend in the difference between the pre-fisc and post-fisc distributions of income is subject to many qualifications, it has more validity than drawing conclusions about the total redistributive effects of government on the basis of a comparison of pre-fisc and post-fisc income distributions in a single year.

Governments can influence the distribution of income through regulations that do not involve spending and taxation. Examples are minimum wage legislation, immigration policy, marketing boards, import quotas, and other regulations that deal with unions, professional bodies, competition, and so on. Compensation policies by government (such as the “6 and 5 program,” the extension of maternity benefits, and “equal pay for work of equal value”) may also have a large impact on the distribution of income because governments are large employers and their policies can undoubtedly influence pay in the private sector. Finally, the pricing policies of Crown corporations such as Hydro-Québec or Alberta Government Telephones are as important as some excise taxes in influencing the well-being of consumers.

For the most part, fiscal incidence studies have focussed on the distributional effects of activities that involve the provision of public services, the distribution of transfers, or the levying of taxes. The exclusion of compensation and pricing policies can be justified if government policies are essentially the same as the private sector’s. The regulatory activities of government have been excluded in order to make the study of the distributional effects of government tractable. Consequently, one must bear in mind that even the most comprehensive incidence study deals solely with the budgetary activities of government, and that other government policies may have a significant influence on the distribution of income.

Although the redistributive effects of government by classifications other than income — such as age group, wealth, or geographic location — are of interest, most studies focus on the redistributive effects by income group, in part because of the general public’s enduring interest in this type of redistribution and because data by income groups are readily available. Most studies adopt annual income as the basis for examining the redistributive effects of government, but this is often viewed as inadequate because it may disguise important life-cycle effects. A household’s income, expenditure, and savings may vary over the lifetime of its members. Hence the taxes it pays and the benefits it receives from government will change. For example, an elderly couple may be dissaving and therefore their pay-

ment of sales and excise taxes may be relatively high. At the same time, their utilization of medicare and hospital services may be high and that of education services low. The redistributive effects of government on a household over a lifetime then may be quite different from the effects at a particular point in a life cycle. Since the lifetime redistributive effects may provide the best basis for judging the impact of government on inequality, many commentators on fiscal incidence studies have lamented the lack of longitudinal data on households that would make such studies possible. These data limitations have necessitated the focus on the distributional effects on groups defined by annual income. However, a recent simulation study of the lifetime incidence of the tax system by Davies, St-Hilaire, and Whalley (1984) is at least a partial remedy, and it is discussed in the next section.

Given that annual income is to be used to group households, analysts like to have a comprehensive measure of income, since this provides the most accurate reflection of the household's potential level of well-being. Ideally, one would like to measure income according to the Haig-Simons definition, where income is equal to the value of consumption plus the change in net worth over the year. In an attempt to approximate this comprehensive measure, analysts start with money income data available from Statistics Canada, which measure household incomes from wages and salaries, self-employment, transfers (such as unemployment insurance benefits and family allowances), interest and dividends, and other miscellaneous sources. Analysts then typically adjust these data for income sources that are not included in Statistics Canada's series, such as capital gains, imputed income from owner-occupied housing, and retained earnings of corporations.

Analysts often make a further set of adjustments to the income data, depending on the conceptual experiment that an analyst is attempting to describe. For example, if the analyst is assuming that the corporation income tax is borne by all the recipients of capital income, then corporation income taxes paid are included in the incomes of all households which receive capital income. Thus, changes in tax incidence assumptions may produce changes in the assumed distribution of gross income as well as in the distribution of the actual tax burden. A further example of this type of adjustment is Gillespie's use of "broad income" to measure income in the absence of the public sector and "adjusted broad income" to measure income in the presence of the public sector. Broad income is a comprehensive measure of income less transfer payments by government and adjusted broad income is broad income plus the value of government services and transfers less taxes.

In fiscal incidence studies, two alternative approaches are often used to illustrate the redistributive effects of government. One common approach is to present the pre-fisc and post-fisc shares of income of the different income groups. If the post-fisc income shares of the lowest income groups

are higher, then the fiscal effects of government are interpreted as promoting greater equality. Gini coefficients can be computed from the income shares and if the post-fisc Gini is lower than the pre-fisc Gini, then the fiscal effects of government are again interpreted as promoting greater equality, though the possibility of ambiguous changes arising if the Lorenz curves for pre-fisc and post-fisc intersect should be noted.

The other common approach is to compute the average tax rate or the average expenditure rate by income group. A tax or set of taxes is said to be regressive, proportional, or progressive, if the effective average tax rate falls, remains constant, or rises as income rises. A progressive tax will cause the Lorenz curve of after-tax income to lie inside the Lorenz curve of pre-tax income, and can therefore be said to promote equality. Similarly, a proportional tax has no effect on the Lorenz curve, and a regressive tax will shift the post-tax Lorenz curve out and result in greater inequality. The distribution of government expenditures is said to be regressive, proportional, or progressive if the ratio of benefits to income falls, remains constant, or increases as income increases. In this case, a regressive distribution of government expenditures promotes greater equality. It is recognized that this terminology may cause confusion in some instances because a regressive tax increases inequality while a regressive distribution of expenditures promotes greater equality. Therefore, the terms pro-poor, neutral, or pro-rich are also used to describe the distribution of government expenditures.

Analysis of Tax Incidence

The analysis of the incidence of a tax is complex because the burden of a tax may be shifted from the individual who is legally responsible for paying it to other individuals, through changes in the prices of consumer goods and/or the returns to labour and capital. Forward shifting of a tax is said to occur when a tax which an individual or firm is required to pay results in an increase in the price of the taxpayer's product. Backward shifting of a tax occurs when a tax which an individual or a firm is required to pay results in the reduction in the price of one of the inputs employed by the individual or firm.

In analyzing the effect of imposing a tax, it is important to recognize which factors are assumed to remain constant. If all other taxes and government expenditures are held constant while the tax being analyzed is increased, then the analysis is termed "absolute tax incidence." The problem with this approach to the study of tax incidence is that the government's surplus will increase (or deficit decrease), and this change can affect macroeconomic variables, such as the rate of unemployment or of inflation, making it difficult to isolate the pure incidence effect of the tax increase from the macroeconomic effect of the change in the government's surplus or deficit.

To avoid the problem of changing the surplus or deficit when a tax changes, two alternative approaches are used. One approach, termed the “differential tax incidence,” assumes that another tax yielding the same revenue is simultaneously reduced when the tax under study increases. The problem with this approach is that the differential incidence of a given tax is not unique because it depends, in general, on which other tax is assumed to decrease. To provide some standard for the analysis, it has become customary to assume that a proportional income tax is the one varied when the incidence of a given tax is studied. An alternative approach is called “balanced budget incidence.” This assumes that government expenditures are increased by the same amount as the revenues collected from the tax change under study. The balanced budget incidence also suffers from the problem of non-uniqueness since different assumptions about the pattern of the increase in expenditures yield different incidence results.

The burden of taxation is borne by the individual or household through changes in its sources of income and/or its uses of income. Changes in the sources are the result of changes in the prices of the inputs that generate the household’s income and in the taxes the household pays directly on its income. Changes in the use of income arise from changes in the prices, including tax, of the products consumed by the household. Taxes may affect households in both sources and uses. Consider the effect of an increase in a tax on cigarettes on a worker who is employed on a tobacco farm and who also smokes. Insofar as the tax leads to an increase in the price of cigarettes, the worker is affected on the uses side. This effect is greater the larger the share of income spent on cigarettes and the larger the percentage increase in the price of cigarettes. If the price of cigarettes does not go up by the amount of the tax, some of the tax will be shifted backward to the inputs used in the production of cigarettes. The employee on the tobacco farm would be affected on the sources side to the extent that wages decline because of a reduction in the demand for the worker’s services. The effect on the sources side is greater the larger the proportion of income that is derived from employment on the tobacco farm and the larger the percentage decline in the wage rate.

Tables 3-1 and 3-2 help to clarify how different effects on the sources and uses of incomes arise. These data on the incomes and expenditures of five groups of households in 1972 were prepared by St-Hilaire and Whalley (1983) for the analysis of tax incidence. Table 3-1 gives the percentage of income from three sources — labour, capital, and transfers (such as unemployment insurance and old age security) — for each of the income groups. Note that transfers represent almost three-quarters of the income of the lowest income group. The percentage of income derived from labour increases until the fourth group and then falls in the highest income group because of the relative importance of capital income for that group. As might be expected, the share of income from transfers declines as income increases. It may come as a surprise that the share of income from capital

is relatively constant over the first four income groups. The importance of capital income to the lowest income group is most clearly seen in the last column, which shows that capital income as a percentage of total income excluding transfers is lowest for the middle groups; on a graph, this would appear U-shaped. The reason for the relatively high share of capital income in the lowest income group is that the elderly, heavily represented in this group, receive capital income from past savings.

TABLE 3-1 Sources of Income in Canada, 1972

Income Class	Percentage of Households	Percentage of Income from			Capital Income as Percentage of Income Excluding Transfers
		Labour	Capital	Transfers	
Under \$6,500	16.6	13.3	12.8	73.9	49.0
\$6,500 to 10,000	22.0	57.7	14.1	28.2	19.6
\$10,000 to 13,000	17.5	76.2	12.2	11.6	13.8
\$13,000 to 18,000	21.4	80.7	12.0	7.3	12.9
\$18,500 and over	22.5	69.3	27.0	3.7	28.0

Source: Calculations based on data in F. St-Hilaire and J. Whalley, "A Microconsistent Equilibrium Data Set for Canada for Use in Tax Policy Analysis," *Review of Income and Wealth* 29 (1983): 175-204.

Table 3-2 illustrates the uses side by showing expenditures as a percentage of income for various categories of expenditure. First, note that expenditures on food and housing represent 63.8 percent of income for the lowest income group and that the percentage of income devoted to these two major categories declines with income. The final row shows total expenditures as a percentage of income. Note that the lowest income group is dissaving because expenditures exceed income. Savings for the other income groups are positive, and expenditures as a percentage of income fall as income increases to the point where the highest income group saves roughly 40 percent of its income. Dissaving among the lowest income group can be explained by the relatively high proportion of elderly persons who may be running down the stock of wealth that they accumulated over their working lives. In addition, the lowest income group contains people who are "temporarily" poor (perhaps because of a spell of unemployment) who may be borrowing to maintain their standard of living with the expectation that their incomes will increase in the near future.

Tax incidence analysis has traditionally focussed on changes in the relative prices of products and inputs rather than on absolute price changes.

TABLE 3-2 Expenditures by Households as a Percentage of Income, Canada, 1972

Category	Income Groups ^a				
	Under \$6,500 (16.6)	\$6,500– 10,000 (22.0)	\$10,000– 13,000 (17.5)	\$13,000– 18,500 (21.4)	\$18,500 and over (22.5)
Food	30.1	22.2	18.4	15.3	9.6
Housing	33.7	22.3	19.6	17.8	12.7
Furniture	6.1	6.2	6.0	5.9	4.6
Clothing	6.6	7.2	6.5	6.1	4.9
Personal Care	10.3	7.0	5.5	4.6	2.9
Transportation	8.9	11.7	11.7	10.3	7.7
Tobacco and Alcohol	6.4	6.5	5.8	4.9	3.4
Personal Services	8.3	7.9	7.3	8.0	7.1
Financial and Miscellaneous	5.2	4.7	5.8	5.0	4.2
Total Expenditures	115.6	95.8	86.6	77.8	57.1

Source: Calculations based on data in F. St-Hilaire and J. Whalley, “A Microconsistent Equilibrium Data Set for Canada for Use in Tax Policy Analysis,” *Review of Income and Wealth* 29 (1983): 175–204.

a. The percentage of households in income groups is given in parentheses.

Thus, in the above example, the decline in the wage rate of a tobacco worker is not necessarily an absolute decline. All that is required for the predicted burden to occur is that the wage rate of the tobacco worker declines relative to other prices in the economy. For the most part, tax incidence studies ignore changes in the price level and focus on the relative price change. In addition, it is normally assumed that relative prices in the economy are sufficiently flexible to keep the economy at full employment. When there are unemployed inputs, the prices of these inputs fall (relative to other prices) until adjustment in the demand for and supply of these inputs reestablishes full employment. Although the assumption of full employment may seem rather severe, it is part of the effort to disentangle the macroeconomic effects of taxation from the distributional effects.

An analysis of tax incidence attempts to describe how the burden of a tax is distributed across households. To measure backward and forward shifting of taxes, economists have constructed general equilibrium models of the economy which permit the prices in one sector to influence prices in other sectors and which also capture the resulting feedback effects. An example may help to clarify why the general equilibrium effects of a tax are important in tracing the burden of a tax. Suppose that a specific tax is imposed on the return to capital in the service sector of the economy. The short-run effect of the tax would be to reduce the return to owners of capital in the service sector. Therefore, in the short run, the entire

burden of the tax would be borne on the sources side by the owners of capital in the service sector. However, in the long run, capital leaves the service sector and flows to the other sectors of the economy until rates of return on capital, net of tax and adjusted for risk, are equalized. Therefore, any long-run burden of tax is borne by all recipients of capital income and not just those with capital employed in the service sector.

Will the recipients of capital income bear all of the burden of the tax? The answer depends on the characteristics of production and consumption and how the suppliers of labour and capital respond to changes in their returns. First, there may be an effect on the uses side because the price of services rises relative to other prices when the gross rate of return of capital in the service sector is higher than in other sectors. Therefore, *ceteris paribus*, households that spend a relatively large proportion of their budget on services will be adversely affected by the tax. Second, the increase in the relative price of services causes a decline in the demand for services and hence in their output. The decline in the output of the service sector means that labour and capital employed in that sector have to seek employment elsewhere. The service sector is more labour intensive than other sectors (that is, the capital-labour ratio is lower in the service sector than in other sectors), and therefore the downward pressure on wage rates tends to be relatively great. If the fraction of the labour force employed in the service sector is relatively large and the ability to substitute labour for capital in the service sector is relatively small, then there may be a significant decline in the wage rate paid to labour. Thus, part of the burden of the tax may fall on all labour incomes even though the tax is imposed on income from capital in the service sector.

The above example illustrates why it may be important to analyze the incidence of taxes in a general equilibrium model that allows for interactions between sectors. It also indicates the parameters and assumptions which play key roles in determining the incidence of the tax. Two sets of parameters that depend on consumer behaviour are important. One set measures the responsiveness of consumer demand to changes in relative prices of products. In the above example, the greater the responsiveness of demand for services to increases in their prices, the greater the burden on the sources side as more labour and capital are released from the service sector. Second, the distribution of the burden of the tax on the uses side depends on the share of services in household budgets. When the budget share of services rises as a household's income rises, high income households bear a larger burden of the tax.

A third set of important parameters measures the responsiveness of the supplies of inputs to changes in the net return to inputs. In the above example, the supply of capital in the service sector is fixed in the short run, and the owners of capital in that sector bear the entire burden of the tax. Except in cases where a tax may be temporary, most tax incidence studies are interested in the long run when net rates of return on investment

and net wage rates are equalized across sectors. This implicitly assumes that markets are competitive and inputs are perfectly mobile. In this long-run period, it is often assumed that while the supply of an input to a particular sector is completely responsive to its net return (given the perfect mobility assumption), the supplies of labour and capital to the economy as a whole are completely unresponsive to changes in their net returns.

This assumption of an unresponsive stock of capital is open to challenge on two grounds. First, in a small open economy such as Canada, the rate of return on capital net of tax must be reasonably close to what can be earned abroad. Otherwise there will be large inflows of investment if rates on return are higher than abroad and vice versa. Second, even in a closed economy, the stock of capital will grow if there is net saving, and there is some evidence that the net rate of return on savings has a significant positive effect on the savings rate.³ In general, the greater the responsiveness of the supply of an input to changes in the net return to the input, the smaller the burden of taxation borne by the input.

Other important parameters which are related to the production technology are measures of the ease of substituting labour for capital in each sector and whether a sector is capital intensive or labour intensive. These parameters affect the extent of adjustment in relative input prices.

A common assumption in tax incidence models is that markets are competitive. In these models, none of the agents in the economy has market power and none can deliberately respond to taxes by adjusting their own prices or wage rates. Most models assume competitive behaviour because many sectors of the economy can be characterized as competitive and because non-competitive models are often extremely complex. The simplest type of non-competitive model is the monopoly — a situation that exists when there is one seller of a product with no close substitutes. It might be thought that a monopolist would pass on all taxes levied on excess profits (return on investment over and above the normal return), or on the price of the product. However, this does not occur if the monopolist is pricing the product so as to maximize profits. In this case, the seller bears all of a tax that is levied on excess profits and passes on to consumers only 50 percent of a \$1 per unit tax on the product if the demand curve faced is linear and the average cost of production is constant. In a similar situation under competition, all the tax is passed on to consumers. Therefore, non-competitive market organization does not necessarily imply that more forward or backward shifting occurs.

The preceding discussion gives some indication of the complex interactions that can result from the imposition of a tax. The ultimate distribution of the burden of the tax depends on the parameters and assumptions described. It should not come as a surprise that a distressingly wide range of results is possible, given different sets of values for these parameters. Tax incidence studies have typically adopted a set of assumptions about how the burdens of various taxes are distributed, given their authors'

judgments about the actual values of the key parameters, the appropriate framework, and the evidence from econometric studies of tax incidence. Table 3-3 gives a typical set of tax incidence assumptions for five major taxes. These assumptions are discussed below.

TABLE 3-3 Typical Tax Incidence Assumptions

	Assumption
Individual Income Tax	<ul style="list-style-type: none"> • not shifted • tax is distributed according to income tax payments
Corporation Income Tax	<ul style="list-style-type: none"> • partially shifted • ½ distributed by dividends and ½ distributed by consumption
Property Taxes	<ul style="list-style-type: none"> • partially shifted • tax on land borne by landowners • tax on capital (improvements) borne by consumers
Sales and Excise Taxes	<ul style="list-style-type: none"> • shifted if imposed on producer • distributed by consumption
Social Security Taxes	<ul style="list-style-type: none"> • shifted to employees if imposed on employers • distributed according to employee contributions

Source: See text.

Individual Income Tax

The individual income tax has become the largest single source of tax revenue. The distribution of the income tax therefore has an important influence on the distribution of the total tax burden. The standard assumption that the individual income tax is not shifted (and therefore the burden is distributed according to the distribution of tax payments) is based on the notion that the supplies of labour and capital to the economy are unresponsive to changes in their net of tax returns. With respect to labour, this assumption is consistent with some empirical evidence from Canada and other countries on labour supply decisions.⁴ However the assumption of unresponsive labour supplies may not apply to young people, those close to retirement, and females who are secondary earners. The first two categories of individuals are heavily represented in the lowest income groups and if they respond to reductions in their net wage rates by reducing their supplies of labour to the market, then the standard assumption may overstate the actual burden of the income that is borne by the lowest income groups.

As has already been noted, the supply of capital to the Canadian economy may respond to changes in income tax rates because the Canadian

economy is relatively open to international capital flows and the net savings rate may respond to the net rate of return on savings. Therefore, the standard incidence assumptions may overstate the extent to which the recipients of capital income bear the burden of the income tax.

Corporation Income Tax

The incidence of the corporation income tax is perhaps the most controversial subject in the field of tax incidence. In a ground-breaking paper, Harberger (1962) analyzes the corporation income tax as a tax on income from capital in the corporate sector of the economy, using a two-sector general equilibrium model. By simulating the effect of the tax using a range of parameter values appropriate to the U.S. economy in the 1950s, he concludes that the entire burden of the tax is borne by the recipients of capital income. (It should be noted that Harberger assumes a fixed stock of capital which, as previously noted, may overstate the burden of the tax borne by capital.) There have also been a number of econometric studies of the impact of the corporation income tax using U.S. and Canadian data.⁵ The results from the econometric studies have ranged from zero to more than one hundred percent shifting of the corporate income tax and therefore do not provide much guidance.

More recently, attention has been focussed on the effects that depreciation allowances and the deductibility of interest payments have on the effective rate of the corporate income tax. It has been shown that, depending on the pattern of depreciation allowances, the corporation income tax may be a neutral tax (that is, it taxes only excess profits and therefore has a very different effect from the tax on all income earned by capital in the corporate sector, which Harberger assumes) or it may even act as a subsidy to corporate capital.⁶ Again, the theoretical and empirical literature provides a wide range of possible results. The typical incidence assumption is defensible, although limiting the burden on capital incomes to those who receive dividends does seem overly restrictive. In any event, most tax incidence studies employ a number of alternative assumptions about the incidence of the corporation income tax, in view of the uncertainty concerning its incidence.

Property Taxes

The incidence assumption for property taxes given in Table 3-3 corresponds to the “traditional” view of the incidence of the property tax. This view of the incidence of the property tax seems to be reasonably appropriate when analyzing the differential incidence of the property tax in one local government, because it assumes a completely responsive supply of capital to changes in the net return on capital.⁷ (Note that this is inconsistent with the assumption, employed in the analysis of income tax, that capital is fixed.) This traditional view has led to its reputation as a highly regressive tax since consumption, particularly of housing services, represents a larger

share of the budgets of low-income families. In the early 1970s, the traditional view was challenged by Aaron (1974), Mieszkowski (1972), and others who felt that the property tax should be viewed as a tax on capital income, which is levied at a national average rate with local variations, up and down. In this “new” view of the property tax, capital incomes bear the burden of the tax at the national average rate because it is implicitly assumed that the stock of capital is fixed for the economy as a whole. Local variations in the rates of property taxation produce local variations in the cost of consumption and housing, but these local variations in price cancel out on the uses side from a national perspective. This “new” view implies that the property tax is less regressive, and perhaps even progressive, since the entire burden of the tax is assigned on the sources side to the recipients of capital income. However, as Bird (1976) points out, if the supply of capital to the Canadian economy is highly responsive to the net rate of return, then the traditional view may still be the most relevant for a Canadian incidence study.

Sales and Excise Taxes

Sales taxes are levied by the federal government at the manufacturers level and by nine of the ten provincial governments at the retail level. The list of goods which are exempt from federal and provincial sales taxes is quite extensive.⁸ Excise taxes are taxes levied on specific goods. Examples are the taxes on alcohol, tobacco, and gasoline levied by the federal and provincial governments. Table 3-4 shows that there is considerable variation in sales and excise tax rates across different categories of consumer goods.

TABLE 3-4 Consumer Indirect Tax Rates in Canada, 1972 (percentage)

Category	Tax Rates on Net of Tax Consumer Expenditures
Food	2.1
Housing	2.0
Furniture	12.1
Clothing	14.4
Personal Care	5.6
Transportation	18.2
Tobacco and Alcohol	126.5
Personal Services	7.0
Financial and Miscellaneous	0.2

Source: F. St-Hilaire and J. Whalley, “A Microconsistent Equilibrium Data Set for Canada for Use in Tax Policy Analysis,” *Review of Income and Wealth* 29 (1983): 175–204, Table 12.

The standard assumption of incidence studies is that sales and excise taxes are entirely borne on the uses side and are distributed among households according to consumption of the taxed good. The validity of this view depends in part on whether factor intensities are the same across different

industries facing different effective rates of sales or excise taxes. For example, if the service sector faces a relatively high rate of sales or excise taxation, then part of the burden of the tax tends to be borne by labour, because the service sector is labour intensive. The decline in the volume of services demanded would cause the release of labour and capital in such proportions that there would be downward pressure on wage rates. Some evidence on the empirical importance of this effect is discussed at the end of the next section.

Social Security Taxes

Social security taxes are the payroll taxes used to finance such programs as Canada Pension Plan, the Quebec Pension Plan, and the unemployment insurance program. In competitive labour markets, a payroll tax is borne by the employee if the total supply of labour is completely inelastic even if the tax is collected from the employer. In this case, the tax is shifted from the employer to the employee because wage rates are lowered by the amount of the tax paid by the employer. Many labour markets do not conform to the textbook model of competition because wages are negotiated between a union representing employees and a large employer (or employer organization). Given this institutional setting, some have felt that unions, concerned with their members' take-home pay, will bargain for higher wage rates when there are increases in tax rates on labour income. This "tax-push" effect has been the subject of a number of econometric studies.⁹ As in the case of the corporate income tax, the results of these studies range from zero shifting to more than one hundred percent shifting, and consequently are not very helpful. Theoretical models of union wage behaviour can be constructed which are analogous to the monopoly model.¹⁰ In these models, unions may want to pass on tax increases, but at a cost of reduced employment, and this may severely inhibit the extent of the tax-push effect. Therefore, in the absence of better information, a reasonable approach is to assume that all social security taxes are borne by the recipients of labour income.

To reiterate, tax incidence is a complex issue. Assumptions about the distribution of tax burden adopted in the studies reviewed below are based on their authors' judgment of the current state of knowledge about tax incidence. As the above discussion indicates, there may be many problems with the typical set of assumptions about tax incidence. The authors of these studies, fully aware of these difficulties, frequently use alternative assumptions about the distribution of tax burdens to test the sensitivity of their results to the particular set of assumptions they have adopted. The use of sensitivity analysis in tax incidence studies may remind some readers of the bureaucrat's credo, "When in doubt, mumble." However, this approach may be less misleading than that employed in other segments of society where the slogan seems to be, "When in doubt, shout louder."

Comparison of Models and Assumptions

In recent years, large empirical models of economies have been developed for the United States and Britain which allow analysts to simulate the incidence of taxes.¹¹ In these models, explicit assumptions are made about the numerical values of the key parameters, and numerical estimates of the distribution of the burden of taxation are generated by the model. This contrasts with the studies of tax incidence reviewed in the next section, where a set of assumptions such as those in Table 3-3 are made about the distribution of the burden of taxes based on some implicit assumptions about the values of the key parameters and the nature of the economy. A comparison of the results of these two different types of tax incidence studies is performed by Devarajan, Fullerton, and Musgrave (1980). They find that a large simulation model generates a pattern of tax incidence that is qualitatively similar to that based on the standard incidence assumptions for increases in income tax and taxes on housing, gasoline, and clothing and jewellery. However, except in the case of the income tax, the quantitative differences in the distributions of the tax burdens seem quite large.¹² This implies that the standard assumptions about tax incidence yield broadly the same results as those generated by a general equilibrium model, but the estimates of the extent of the burden may be quite different.

Analysis of Expenditure Incidence

The difficulties in allocating the benefits of government expenditures across income classes are, if anything, even greater than those encountered in allocating the burden of taxation. In discussing these problems, it is helpful to divide government expenditures into three broad categories: public goods, quasi-public goods, and cash transfers. The term “public good” is used by economists to denote those goods and services which have the following characteristics: no one can be excluded from enjoying the benefits of the good, and the benefits received by a given number of users from a given amount of the good are not affected by the addition of another user. Goods and services which do not have these two characteristics are termed “private goods” since the private sector normally provides them. Not all of the services provided by governments are public goods. In the studies by Dodge (1975) and by Gillespie (1980a, 1980b), public goods (or what they call general expenditures) represent about 30 percent of government expenditures.

Examples of public goods are defence activity, police protection, and public health measures that prevent the spread of contagious diseases. One of the characteristics of public goods is that everyone consumes the same amount (at least within a given geographical area), but this fact does not mean that everyone derives the same benefit. For example, wealthy individuals may place a higher value on a given level of national defence activity

because they have more property that requires protection from foreign invasion. The allocation of the benefits of public goods among households is thus made difficult by the fact that everyone consumes the same amount but may derive different levels of benefits. In the absence of markets for public goods, analysts have adopted arbitrary allocation rules such as equal benefits per household or benefits allocated in proportion to income. A slightly more sophisticated procedure developed by Aaron and McGuire (1970) and by Maital (1973) involves the specification of a particular set of consumer preferences between public goods and private goods. This set of preferences is consistent with other models of consumer behaviour and allows the analyst to allocate benefits by income class. Under the usual assumptions employed in this procedure, the share of benefits rises with income.¹³

Quasi-public goods represent a second broad category of government expenditures. Included in this category are expenditures on transportation, education, hospitals, and medicare. Approximately 40 to 50 percent of government expenditures are included in this category. Although the goods in this category may share to some degree the two characteristics that define public goods, they generally differ in one important respect as far as incidence is concerned: the use of the good, service, or facility can vary by household. As a result, analysts have typically allocated the benefits by some statistical series which proxies the household's use of the good. For example, Dodge (1975, p. 8) allocates education benefits on the basis of children in families and highway benefits on the basis of expenditure on motor vehicles and consumption of transportable goods.

The third general category of expenditure is cash transfers. Included in this category are unemployment insurance, old age security, Canada Pension Plan, Canada Assistance Plan, interest on the public debt, and so on. This category represents 20 to 30 percent of government expenditure.

There are five general problems with the procedures for allocating benefits from government expenditures. The first problem concerns equating the benefits of the service with the total cost of providing it. If services are provided efficiently and if distributional considerations are not important, then services will be provided to the point where the difference between total benefits and total costs is positive and at a maximum. However, governments may not have the necessary information or the incentive to be efficient, and distributional considerations are always important. Hence, in the absence of better information, analysts are forced to assume that the total benefit from a service equals the total cost of providing it.

The second problem arises because the expenditure on a service does not necessarily equal the cost of providing it. Perhaps the most important reason for a divergence is the inclusion of capital expenditures in total expenditures. The capital costs of a facility should be spread over the useful life of the facility to develop an estimate of the annual cost of providing

the service. Including all the capital expenditures in the year in which they are incurred as a measure of the benefit from a facility tends to overestimate the benefits in that year and underestimate the benefits in future years.

A third problem arises in allocating the benefits of programs such as medicare or unemployment insurance to the recipients of benefits from these programs in a particular year. In many ways, it is best to view these programs as insurance schemes even though they are not run on private insurance principles. In discussing the redistributive effects of insurance, it is important to distinguish between *ex ante* and *ex post* redistribution. Private insurance schemes always result in *ex post* redistribution to those who have suffered losses from those who have not suffered losses but have paid premiums nonetheless. *Ex ante* private insurance normally does not involve redistribution because premiums are set on the basis of expected losses.¹⁴ Similarly, social insurance schemes result in *ex post* distribution. In particular, unemployment insurance tends to redistribute income from the employed to the unemployed, who tend to have lower incomes. An unemployment scheme could be *pro-poor ex post* and *pro-rich ex ante* if low-wage and high-wage workers pay the same tax rate to finance the program, although high-wage workers have a significantly higher probability of being laid off and drawing unemployment insurance benefits. Most would not view such a scheme as promoting equality, in spite of the *ex post* redistributive effects. Therefore, the *ex ante* redistributive effects of social insurance schemes should be examined by computing the expected benefits from these programs for households in each income group.

A fourth problem concerns the benefits from cash transfers and in-kind transfers such as subsidized housing of low income families. The beneficiaries of these programs are normally taken to be the recipients of the transfers. However, the donor-taxpayers who finance these transfers may also benefit if they are altruistic and concerned with the well-being of others in the society. If transfers are based on altruism, then they are similar to public goods such as defence and everyone in society benefits from them, though not to the same extent.¹⁵ Although altruism has undoubtedly played a role in the establishment of our social welfare system, there may have been other motivations, such as the desire for an income insurance scheme. In the absence of information about the benefits to the altruistic, analysts have little choice but to allocate all of the benefits to the recipients.¹⁶

The fifth problem concerns the failure to incorporate any effects on the sources side of expenditures by government. If, for example, government expenditures are on activities that are highly labour intensive, an increase in government expenditure tends to raise relative wage rates. However, data for 1972 indicate that the share of labour costs (including taxes) in value added in public administration and defence is 0.657, which is almost identical to the average share in the rest of the economy of 0.664.¹⁷

Therefore the effects on the sources side may be negligible when a general increase in the various types of government expenditures is considered.

Canadian Fiscal Incidence Studies

This survey of the literature on fiscal incidence in Canada begins with studies of the incidence of the tax system. The next section surveys the comprehensive expenditure incidence studies of Dodge (1975) and Gillespie (1980a, 1980b) and is followed by a section discussing their total fiscal incidence results.

Tax Incidence Studies

Goffman

One of the earliest comprehensive studies of the incidence of the tax system in Canada is by Goffman (1962). His assumptions about tax incidence, as well as those of other studies reviewed in this section, are shown in Table 3-5. His estimates of the average tax rate for seven income classes in 1957 are shown in Table 3-6. The overall pattern of tax rates can be characterized as progressive, with the federal and provincial governments having strongly progressive tax systems and the municipalities having regressive tax systems. He finds that the personal income tax is highly progressive, corporation and business income taxes are proportional, and sales taxes are proportional (or even slightly progressive because of exemptions), and that the federal excise tax rate initially increases with income and then declines. He also finds that the property tax is highly regressive, which is responsible for the regressivity of municipal taxes.

Gillespie

Gillespie (1980a, 1980b) is the dean of Canadian fiscal incidence studies. His research, which began in the early 1960s, shows a painstaking devotion to detail and is the most comprehensive in the field. It covers the period from 1951 to the late 1970s, and examines all taxes and expenditures by the three levels of government and by region. This survey of his research is, therefore, necessarily selective. Table 3-6 compares Gillespie's estimates of effective average tax rates in 1951 and 1961, using the broad income concept, with Goffman's result for 1957. In both years, the same general pattern of tax rates is evident in Gillespie's results. The average tax rate is U-shaped with respect to income. The highest tax rate is paid by the lowest income group. Above average tax rates are paid by the bottom 35 percent and the top 14 percent of families in 1951 and by the bottom 22 percent and the top 5 percent of families in 1961. The main reason for the differences between Gillespie's tax rates and those of Goffman is that Gillespie's tax rates are calculated using the broad income measure, which excludes transfers. Since transfers represent the major part of income for low-income households, Gillespie's tax rates for these groups are correspondingly higher.

TABLE 3-5 Tax Incidence Assumptions of Selected Authors

	Goffman (1962)	Maslove (1972)	Dodge (1975)	Gillespie (1980a)	Pipes and Walker (1984)	Davies, St-Hilaire, and Whalley (1984)	Whalley (1984)
Personal Income Tax							
- distributed according to taxes paid	+	+	+	+	+	+	+
Corporate Income Tax							
- 55% to corporate profit, 30% to consumers, 15% to labour	+						
- 25% to consumers, 75% to owners of capital		+					
- 25% to consumers, 75% to shareholders			+				
- 50% to consumers, 50% to shareholders				+			
- 100% to capital income					+	+	+
Sales and Excise Taxes							
- 100% borne to consumers	+	+	+	+		+	+
- 100% borne according to income net of transfers					+		

TABLE 3-5 (concluded)

	Goffman (1962)	Maslove (1972)	Dodge (1975)	Gillespie (1980a)	Pipes and Walker (1984)	Davies, St-Hilaire, and Whalley (1984)	Whalley (1984)
Property Taxes							
- on land: 100% by owner	+	+		+			
- on capital: 100% by consumer	+	+		+	+	+	+
- 100% borne by capital income			+				
- not discussed							
Payroll Taxes							
- on employee: 100% on labour		+	+	+	+	+	+
- on employer: 100% on labour			+	+	+	+	+
- on employer: 50% on labour & 50% on consumer		+					
- not discussed	+						

TABLE 3-6 Effective Average Tax Rates, Canada, 1951, 1957, and 1961 (percentage)

Gillespie's Results for 1951			Goffman's Results for 1957			Gillespie's Results for 1961		
Distribution of Families by Income	Tax Rate		Distribution of Taxpayer Units by Income	Tax Rate		Distribution of Families by Income	Tax Rate	
(lowest)	16.5	47.8	(lowest)	10.8	21.9	(lowest)	21.7	60.0
	18.4	34.9		14.0	20.9		12.1	32.9
	22.4	28.3		15.6	21.0		13.4	32.2
	19.3	29.8		17.1	20.9		14.8	30.5
	9.6	29.4		13.8	23.0		21.4	32.8
	12.2	35.7		16.3	24.5		11.5	34.2
(highest)	1.7	32.1	(highest)	12.4	32.4	(highest)	5.0	38.4
All Groups	100.0	30.7		100.0	25.8		100.0	34.7

Source: W.I. Gillespie, *The Redistribution of Income in Canada* (Ottawa: Carleton Library, 1980, Tables 6.1 and 6.2; and "Taxes, Expenditures and the Redistribution of Income in Canada, 1951-1977," in *Reflections on Canadian Incomes*, selected papers presented at the Conference on Canadian Incomes sponsored by the Economic Council of Canada, Winnipeg, May 10-12, 1979 (Ottawa: Minister of Supply and Services Canada, 1980), Table 1; and I. Goffman, *The Burden of Canadian Taxation* (Toronto: Canadian Tax Foundation, 1962), Tables II and IV.

Gillespie's estimates of effective average tax rates in 1969 are shown in Table 3-7. The estimated tax rates decline as income increases over the bottom 28 percent of families, are roughly constant over the middle income range containing 65 percent of families, and then decline slightly for the highest income group containing 8.3 percent of families. Gillespie examines the sensitivity of this pattern of tax rates by considering the implications of ten alternative assumptions about tax incidence. Three of these "experiments" with alternative incidence assumptions are considered below. Experiment 1 shows the effect of allocating all the burden of the corporate income tax to the recipients of dividends rather than allocating 50 percent to the recipients of dividend income and 50 percent to consumers, as in the standard case. With these alternative assumptions, the tax rates for the bottom 44 percent of families are lower (substantially lower for the lowest income group), higher for the 8 percent of families in the range \$6,000 to \$6,999 and about the same for the top 48 percent of families. Gillespie (1980a, p. 63) notes that the overall pattern of tax rates is about the same as in the standard case and concludes that "the incidence of the total tax structure is not significantly affected by whether the corporate income tax is assumed to be shifted to consumers or borne by share-owners." This may follow from the fact that capital income represents a large share of income (net of transfers) for the low-income group.¹⁸ Experiment 3 shows the effect of allocating sales and excise taxes to the sources side rather than to the uses side. As a result, the tax rate paid by the lowest income group is almost cut in half. However, this group continues to pay the highest tax rate, and the general pattern of tax rates for the other groups is not greatly altered. Experiment 6 shows the effect of changing the assumption about the incidence of payroll taxes such that, of the tax collected from employers, 50 percent is assumed to be borne by labour and 50 percent to be shifted forward to consumers. This assumption reduces tax rates at the lower income levels but produces basically the same structure of tax rates.

Consequently, Gillespie concludes that the tax system is proportional over the middle-income brackets and regressive over the lower and upper income ranges, and that this tax incidence pattern is not sensitive to the alternative incidence assumptions examined. However, he notes that when tax rates are computed using adjusted broad income rather than broad income, the tax system is regressive over the lowest income range containing the 20 percent of families with the lowest incomes, progressive over the middle-income brackets, and mildly regressive for the highest income groups containing 8 percent of families.

Maslove

Maslove (1973) also examines the incidence of the Canadian tax system in 1969, and his estimates of effective average tax rates are also shown in Table 3-7. The general pattern of tax rates is similar to that found by

TABLE 3-7 Effective Average Tax Rates Estimated by Selected Authors, Canada, 1969 and 1970 (percentage)

Gillespie's Results for 1969			Maslove's Results for 1969			Dodge's Results for 1970		
Distribution of Families by Income	Tax Rate		Distribution of Families by Income	Tax Rate		Distribution of Families by Income	Tax Rate (broad income)	Tax Rate (adjusted broad income)
(lowest) 12.3	96.3		(lowest) 12.3	120.3		(lowest) 9.9	84.2	27.5
8.0	57.5		8.0	60.6		6.5	49.5	25.0
7.8	45.8		7.8	47.5		7.4	56.8	33.0
7.6	43.0		7.6	43.1		6.8	48.1	33.8
8.0	42.2		8.0	41.9		6.7	42.6	34.1
7.9	43.4		7.9	40.8		7.3	41.1	35.5
			8.4	40.4		6.9	40.1	35.6
22.0	41.7		7.5	40.9		7.6	39.1	36.7
			6.1	40.1		6.8	39.9	38.4
			5.6	39.9		5.8	39.0	38.2
18.2	42.0		4.3	40.0		5.3	39.1	39.6
			8.3	39.8		4.0	39.6	41.4
(highest) 8.3	38.3		(highest) 8.3	40.9		3.5	38.0	38.3
						2.8	38.3	40.1
						(highest) 12.6	44.2	51.8
All Groups 100.0	41.3		100.0	41.8		100.0	42.2	40.6

Source: W.I. Gillespie, *The Redistribution of Income in Canada* (Ottawa: Carleton Library, 1980, Tables 3.3 and 5.3; A. Maslove, *The Pattern of Taxation in Canada*, study prepared for the Economic Council of Canada (Ottawa: Information Canada, 1973), Table 5-15; and D. Dodge, "Impact of Tax, Transfer and Expenditure Policies of Government on the Distribution of Personal Incomes in Canada," *Review of Income and Wealth* 21 (1975): 1-52, Table 7.

Gillespie. Note that the average tax rate for the lowest income group exceeds 100 percent because it is calculated using broad income, which excludes transfers — the most important component of income for the lowest income group. Maslove finds that the municipal property taxes and provincial sales taxes are regressive, the tax rate for the corporate profits tax has a U-shape, and the personal income tax is progressive up to \$16,000 and then proportional over the highest income group, which contains about 8 percent of families.

Dodge

Dodge's (1975) estimates of the effective average tax rates for 1970 using the broad income concept are shown in Table 3-7. The general pattern is also similar to that obtained by Gillespie and Maslove. The lowest income group pays the highest tax rate. Thereafter, as income increases, effective average tax rates generally decline until the highest income group (\$15,000 and over) is reached. Above average tax rates are paid by the lowest 37 percent of families and by the highest income group. Tax rates at both the federal and provincial-local levels exhibit the same general pattern, with the provincial-local tax rates being considerably more regressive at the lower end of the income distribution.

When Dodge uses adjusted broad income, which is broad income plus government expenditures less taxes, to compute average tax rates, the tax system is basically progressive, as can be seen from the last column in Table 3-7. The only income classes which paid above the average tax rate are the \$12,000 to \$13,000 group and the \$15,000 and over group. These results illustrate how conclusions about the progressivity of the tax system depend crucially on the income concept used to compute the average tax rates.

Pipes and Walker

Since 1976, the Fraser Institute has published a series on the taxes paid by Canadians. The results from the latest publication, by Pipes and Walker (1984), are shown in Table 3-8 and indicate that the tax system was progressive over the 1961–83 period.¹⁹ Why are these results completely at variance with the results obtained by other studies? The two crucial factors are the income concept used and the incidence assumptions adopted. First, the income concept used by Pipes and Walker is similar to that used by St-Hilaire and Whalley in that it includes transfers and imputed income from various sources, such as corporate retained earnings and life insurance plans. As previous studies indicate, the inclusion of transfers in income tends to make the tax system more progressive, especially at the lower income levels. Thus, one reason why Pipes and Walker's tax rate structure is progressive is their choice of income measure.

The main reason why they find the tax system progressive, is their choice of tax incidence assumptions. As Table 3-5 indicates, these assumptions are quite different from those used in the other studies reviewed here. Their

TABLE 3-8 Pipes and Walker's Estimated Average Tax Rates, Canada, 1961, 1969, 1976 and 1983

Decile	1961	1969	1976	1983	Change 1961-83
(percentage)					
1 (lowest)	19.9	20.6	15.7	15.3	-4.6
2	19.9	21.5	20.9	20.8	0.9
3	19.9	25.1	25.2	25.8	5.9
4	20.4	26.4	27.4	29.6	9.2
5	20.9	27.8	27.0	31.5	10.6
6	21.3	27.4	27.3	34.2	12.9
7	23.2	28.2	27.9	34.2	11.0
8	23.3	29.7	31.0	35.1	11.8
9	24.6	30.6	33.4	36.2	11.6
10 (highest)	32.9	38.2	38.8	39.7	6.6

Source: S. Pipes and M. Walker, *Tax Facts 4* (Vancouver: Fraser Institute, 1984), Tables 29 and 35.

key feature is that the burden of all taxes is assumed to fall on the sources side according to the amount of capital and/or labour income received. None of the burden is assumed to fall on the uses side.

The adoption of these assumptions stems from tax incidence studies for the United States by Browning (1978) and Browning and Johnson (1979). The Browning and Johnson argument is that, in a tax incidence analysis in which the price level of consumer goods is assumed to remain constant, the burden on the uses side arises from changes in relative prices. The prices of goods which are taxed at relatively high rates rise and the prices of goods which are taxed at relatively low rates fall. As a first approximation, the burden or benefit of these relative price changes for a household depends on the extent to which the household's budget shares for the commodities differ from the average budget shares. For example, suppose that there are only two commodities, bread and cheese, and that one-third of households spend half their income on bread and the remaining two-thirds of households spend three-quarters of their income on bread. The average budget share for bread is two-thirds. If a tax is imposed on bread and the tax collected is returned in equal amounts to households, then the two-thirds of households with above-average budget shares for bread will be worse off and the one-third of households with below average budget shares for bread will be better off.

As a first approximation, the gains and losses on the uses side cancel out across households. In addition, there will be no effects on the uses side if all households have the same budget shares.²⁰ Browning and Johnson argue that the major reason for differences in budget shares of commodities across different income classes is that their savings rates differ. However, they note that savings rates out of "permanent" income are relatively constant across classes. Permanent income is the household's

long-term “average” income, which differs from its annual income because of transitory changes or because its life cycle has reached a certain point. Browning and Johnson seem to regard permanent income as the appropriate base for measuring tax incidence even though they do not have a measure of it. In any event, they argue that the equality of savings rates out of permanent income implies that taxes on the uses side will have little or no effect. Therefore, the burden of a tax, such as a sales tax, occurs only on the sources side through declines in wage rates and returns to capital. The other source of income — transfers — is not affected by the tax. Thus, Browning and Johnson allocate all taxes according to the receipt of labour or capital income. As a result, they find that the tax system in the United States is progressive, since transfers as a percentage of income decline as income increases.

A second argument used by Browning and Johnson to justify their tax incidence assumption, and the one cited by Walker (1980), is based on the notion that transfers are explicitly or implicitly indexed. Thus, if a general sales tax raises the prices of consumer goods and if transfers are indexed to the Consumer Price Index, then households will bear the tax in proportion to their receipt of labour and capital income. In the extreme case in which all of the household’s income comes from transfers, it will not bear the burden of any tax.

The arguments used by Browning and Johnson to justify their tax incidence assumptions can be criticized on a number of grounds.²¹ Their argument that budget shares are so similar that effects on the uses side can be ignored is based on the permanent income hypothesis, which is inconsistent with their empirical analysis (and Pipes and Walker’s) which is based on annual income. While a long-term, even a lifetime, perspective may be appropriate for measuring the distribution of the tax burden, the long-term perspective should be adopted in a consistent fashion throughout the analysis and should not be imposed in an ad hoc fashion on a particular component of it. Based on current income, the budget shares of the lowest income group for two highly taxed categories — alcohol and tobacco and housing (because of the property tax) — are significantly higher than the average budget shares (see Table 3-2). Therefore, it seems completely inappropriate to neglect the effects of these taxes on the uses side.²²

The argument that transfers are indexed and hence the burden of taxation must be borne by the recipients of labour and capital income can be criticized on two grounds. First, if the authors view the indexation of transfers as an actual policy, they should provide evidence that indexation is indeed nearly complete. Second, even if transfers are fully linked to the Consumer Price Index, there is still the problem of effects on the uses side that arise from changes in relative prices and differences in budget shares across income groups.

In summary, Pipes and Walker’s major result — that the tax system is progressive — is based largely on the Browning-Johnson tax incidence

assumptions, which ignore the burden of taxation on the uses side. There are theoretical and empirical problems with this procedure, and the results must therefore be interpreted with caution.

Davies, St-Hilaire, and Whalley

In a recent highly innovative paper, Davies, St-Hilaire, and Whalley (1984) explore the incidence of the tax system on a lifetime basis. Their research is based on a simulation model in which:

each household includes a husband and wife who start economic life together at age 20 and die together at age 75. Households are assigned realistic (exogenous) streams of earnings, transfer payments, and inheritances over the lifetime The simulation generates lifetime paths of consumption and investment income which along with the lifetime income data provide the distributive series for [their] incidence calculations (p. 636).

A detailed description of the model is contained in Davies (1982). Table 3-9 shows annual and lifetime income series generated by the model and the average effective tax rates for annual income and lifetime income. A comparison of the annual and lifetime income distributions indicates that the latter is much more evenly distributed. Whereas the Gini coefficient for the annual income series is 0.41, the Gini coefficient for the lifetime income series is 0.22. Other important differences between the annual and lifetime data series which are not shown in Table 3-9 are that transfers are not as concentrated in the lower deciles in the lifetime income series as they are in the annual income series. The consumption-income ratio decreases as lifetime income increases, but the variance in the ratio is not as great as it is with annual income data. The ratio goes from 0.867 in the first decile to 0.717 in the tenth decile, using the lifetime data. The consumption-income ratios using annual income data are 1.572 and 0.492 for the first and tenth deciles, respectively.

The figures on tax rates in Table 3-9 indicate that the tax system is mildly progressive on the basis of both annual and lifetime income using the "standard" incidence assumptions shown in Table 3-5. However, the authors note that the proportional difference between the pre-tax and post-tax Gini coefficients is considerably larger for the lifetime income data and therefore they claim that "the lifetime tax structure is significantly more progressive than the annual" (p. 642). Their analysis also indicates that the personal income tax is less progressive on a lifetime basis than on an annual basis, but sales and excise taxes are less regressive on that basis. Davies, St-Hilaire, and Whalley also report that alternative incidence assumptions, such as those used by Browning and Johnson, lead to much smaller changes in effective tax rates using the lifetime income data than they do with the annual data, because transfers and savings rates on a lifetime basis show less variation across income groups.

**TABLE 3-9 Davies, St-Hilaire, and Whalley's Estimates
of Annual and Lifetime Tax Rates, Canada**

Decile	Percentage of Annual Income ^a	Percentage of Lifetime Income ^a	Tax Rate on Annual Income	Tax Rate on Lifetime Income
(percentage)				
1 (lowest)	1.0	4.2	35.4	30.9
2	3.1	6.2	28.4	35.5
3	4.8	7.3	30.1	35.9
4	6.4	8.3	31.9	37.7
5	7.7	9.1	32.6	38.1
6	9.0	9.7	33.6	39.8
7	10.4	10.7	33.7	39.8
8	12.1	12.0	35.0	42.2
9	14.9	14.0	36.8	41.3
10 (highest)	30.6	18.4	46.0	46.5
All Deciles	100.0	100.0	37.5	40.2

Source: J. Davies, F. St-Hilaire, and J. Whalley, "Some Calculations of Lifetime Tax Incidence," *American Economic Review* 74 (1984): 633-49, Tables 1 and 2.
a. Income figures based on 1971 data.

Whalley

The last paper in this survey of Canadian tax incidence studies is a recent contribution by Whalley (1984), which illustrates how alternative but plausible sets of assumptions can produce vastly different results. In Table 3-10, his central case assumptions produce a moderately progressive tax system. A highly progressive set of tax rates can be produced by a set of tax incidence assumptions which include: income and capital taxes on future savings; the removal of effects on the uses side à la Browning and Johnson; the taxation of inflation premiums; the allocation of corporation taxes to dividends; and the exclusion of social security taxes from the analysis on the grounds that they are a charge for a service. Alternatively, a highly regressive tax system can be produced by a set of tax incidence assumptions in which capital does not bear the burden of taxation, because either investment in the Canadian economy or savings rates are highly responsive to changes in the net return on capital. Capital income in this case includes that part of labour income that is the result of investment in education and training. Since both sets of tax incidence assumptions contain some elements of plausibility, Whalley's results illustrate the extremely broad bands within which the actual set of tax rates can be presumed to lie.

Comprehensive Expenditure Incidence Studies

Gillespie

Gillespie's (1980a, 1980b) estimates of the incidence of total government

TABLE 3-10 Whalley's Estimates of Average Tax Rates under Alternative Tax Incidence Assumptions, Canada, 1972 (percentage)

Distribution of Households by Income	Central Case Assumptions	Most Progressive Tax Assumptions	Assumptions Where Capital Income Does Not Bear Burden of Tax
(lowest) 16.6	27.5	11.6	83.5
7.1	32.7	19.6	59.2
6.9	35.4	23.0	53.5
8.0	35.0	25.5	45.4
8.9	36.1	27.5	40.8
8.6	35.3	30.3	40.0
8.5	35.6	32.0	38.4
7.3	35.7	35.0	38.2
5.6	37.8	38.3	35.8
4.6	37.1	37.4	35.6
9.3	37.4	44.4	34.5
(highest) 8.6	43.0	70.6	22.2

Source: J. Whalley, "Innis Lecture: Regression or Progression: The Taxing Question of Incidence Analysis," *Canadian Journal of Economics* 17 (1984): 654-82, Tables 2, 4, 5 and 7.

expenditures in 1951, 1961, and 1969 are shown in Table 3-11. In each year, the distribution of government expenditure was pro-poor. Very high expenditure rates are recorded for the lowest income group because of Gillespie's use of broad income (which excludes transfers) as the base in computing the rate. The average expenditure rate over all income groups increased sharply between 1951 and 1961-69, and this obscures to some extent the changes in the relative expenditure rates. In 1951, the expenditure rate for the lowest 34.9 percent of households was 2.65 times the average rate. In 1961, the expenditure rate for the lowest 33.8 percent of households was 2.98 times the average rate. In 1969, the expenditure rate for the lowest 35.7 percent of households was 3.73 times the average rate. These figures indicate the growing relative importance of government expenditures for the poorest one-third of families over the 1951-69 period. These estimates by Gillespie are based on a distribution of the benefits of public goods according to family income, a distribution of the benefits of quasi-public goods according to some measure of usage, and the distribution of benefits and transfers to the recipients of transfers. Gillespie experiments with a number of alternative assumptions about how the benefits of government programs were distributed in 1969 (including allocating the benefits of public goods according to income and according to the methodology of Aaron and McGuire, 1970). Although somewhat different expenditure rates are produced, none of the alternative methods of allocating benefits reverse his conclusion that the distribution of government expenditures is pro-poor.

TABLE 3-11 Gillespie's Estimates of Expenditure Incidence, Canada, 1951, 1961, 1969 (percentage)

1951			1961			1969		
Distribution of Households by Income	Effective Expenditure Rate		Distribution of Households by Income	Effective Expenditure Rate		Distribution of Households by Income	Effective Expenditure Rate	
(lowest)	16.5	113.1	(lowest)	21.7	162.9	(lowest)	12.3	284.5
	18.4	39.1		12.1	72.8		8.0	146.2
	22.4	30.1		13.4	51.4		15.4	80.9
	19.3	28.7		14.8	42.7		15.9	55.1
	9.6	25.8		21.4	38.7		22.0	43.7
	12.2	24.5		11.5	34.2		18.2	34.2
(highest)	1.7	21.0	(highest)	5.1	29.2	(highest)	8.3	27.7
All Groups	100.0	27.9		100.0	43.8		100.0	44.4

Source: W.I. Gillespie, *The Redistribution of Income in Canada* (Ottawa: Carleton Library, 1980, Tables 4.8 and 6.1; and "Taxes, Expenditures and the Redistribution of Income in Canada, 1951-1977," in *Reflections on Canadian Incomes*, selected papers presented at the Conference on Canadian Incomes sponsored by the Economic Council of Canada, Winnipeg, May 10-12, 1979 (Ottawa: Minister of Supply and Services Canada, 1980), Table 1.

Note: The effective expenditure rate is total government expenditures as a percentage of broad income.

TABLE 3-12 Dodge's Estimates of Expenditure Incidence, Canada, 1970 (percentage)

Distribution of Families by Income	Broad Income			Adjusted Broad Income		
	All Government	Federal	Provincial and Local	All Government	Federal	Provincial and Local
(lowest)	290.1	189.4	100.7	94.8	61.9	32.9
6.5	147.8	93.3	54.5	74.5	47.1	27.5
7.4	129.1	80.4	48.7	74.9	46.7	28.3
6.8	90.4	51.1	39.3	63.5	35.9	27.6
6.7	67.7	36.7	30.9	54.1	29.4	24.7
7.3	56.8	28.5	28.3	49.1	24.6	24.5
6.9	52.8	26.1	26.7	46.9	23.2	23.7
7.6	45.7	21.8	23.9	42.8	20.4	22.4
6.8	38.4	19.5	18.9	44.0	21.3	22.7
5.8	38.2	19.6	18.6	41.1	19.5	21.6
5.3	39.6	20.6	19.0	38.0	17.9	20.0
4.0	41.4	21.2	20.2	35.4	17.4	18.0
3.5	39.3	20.4	18.9	34.6	17.1	17.4
2.8	40.1	20.7	19.5	33.5	17.0	16.5
(highest)	51.8	25.9	25.9	29.5	15.4	14.1
All						
Groups	100.0	20.2	20.4	46.2	24.3	21.9

Source: D. Dodge, "Impact of Tax, Transfer and Expenditure Policies of Government on the Distribution of Personal Incomes in Canada," *Review of Income and Wealth* 21 (1975): 1-52, Table 7.

Dodge

Dodge's (1975) estimates of the incidence of government expenditures for 1970 are shown in Table 3-12. Again, the distribution of government expenditures is basically pro-poor. His effective expenditure rates using broad income are similar to those obtained by Gillespie for 1969, except that the highest income group in Dodge's study has an above-average expenditure rate. His results also indicate that both federal and provincial-local government expenditures are pro-poor and that when adjusted broad income is used, the distribution is also pro-poor. Indeed, the expenditure rate using adjusted broad income falls more or less continuously as income rises; this pattern contrasts with the expenditure rate using broad income, which falls over the bottom 60 percent of families, is roughly constant for the next 28 percent of families, and then rises for the highest income group. Dodge (1975) also experiments with alternative assumptions about the distribution of the benefits of public goods, and concludes that "in all cases the pattern of incidence is broadly redistributive" (p. 37).

Total Fiscal Incidence Studies

Gillespie

Gillespie (1980b) combines his estimates of tax and expenditure incidence and obtains measures of total fiscal incidence for the years 1951, 1961, and 1969.²³ The measure of fiscal incidence is the difference between the percentage of adjusted broad income and the percentage of broad income which accrues to a group of families.²⁴ Adjusted broad income includes the value of government services and transfers less taxes, and represents the group's post-fisc income. Broad income is a pre-fisc measure of income that does not include the value of government services and transfers and is gross of taxes. Therefore the difference between these income shares is a measure of the budgetary effect of government.²⁵ Gillespie's results, which are shown in Tables 3-13 and 3-14, indicate, for example, that the lowest income group's share of post-fisc income was 3.6 percentage points higher than its share of pre-fisc income in 1969. In general, the results indicate that there is greater equality in the distribution of post-fisc income. Thus, the pro-poor distribution of expenditures more than offsets the regressive distribution of the tax burden.

Are these fiscal incidence effects large or small? The answer, of course, depends on what they are compared with. If the effects are compared with the shares of broad income among the low-income classes, then they appear to be relatively large. For example, the fiscal incidence effect for the lowest income group in 1969 means that the group's income share was over twice as large when measured on a post-fisc basis as on a pre-fisc basis.

It is argued in the preceding section that one of the main benefits of comprehensive incidence studies is the opportunity they provide to analyze the post-fisc distribution of income. Table 3-14 shows that adjusted broad

income was more evenly distributed in 1961 than in 1951. Between 1961 and 1969, the poorest and the richest income groups increased their shares of adjusted broad income at the expense of the middle-income groups, and consequently the Lorenz curves for adjusted broad income for 1961 and 1969 intersect. Therefore, conclusions about the trend in economic

**TABLE 3-13 Gillespie's Estimates of Fiscal Incidence,
Canada, 1951, 1961, 1969 (percentage)**

Distribution of Families by Income		Fiscal Incidence		
		1951	1961	1969
(lowest)	21.7	1.6	2.6	3.6
	25.5	0.8	2.6	2.9
	25.5	0.6	0.1	-0.2
	22.2	-1.4	-2.1	-4.0
(highest)	5.0	-1.7	-3.2	-2.2
All Groups	100.0	0.0	0.0	0.0

Source: W.I. Gillespie, "Taxes, Expenditures and the Redistribution of Income in Canada, 1951-1977, in *Reflections on Canadian Incomes*, selected papers presented at the Conference on Canadian Incomes sponsored by the Economic Council of Canada, Winnipeg, May 10-12, 1979 (Ottawa: Minister of Supply and Services Canada, 1980), Table 2.

Note: Fiscal incidence is percentage of adjusted broad income minus percentage of broad income.

**TABLE 3-14 Gillespie's Estimates of the Distribution of Broad Income
(BI) and Adjusted Broad Income (ABI),
Canada, 1951, 1961, 1969 (percentage)**

Cumulative Percentage of Families by Income	1951		1961		1969	
	BI	ABI	BI	ABI	BI	ABI
21.7	4.1	5.7	3.1	5.8	3.3	6.9
47.2	18.3	20.7	18.9	24.2	18.2	24.7
72.7	41.5	44.4	46.7	52.1	43.9	50.2
94.9	77.6	79.1	80.6	84.0	80.0	82.3
100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gini Concentration Ratio	0.379	0.361	0.316	0.258	0.361	0.290

Sources: Computations based on W.I. Gillespie, *The Redistribution of Income in Canada* (Ottawa: Carleton Library, 1980), Table 6.2; and "Taxes, Expenditures and the Redistribution of Income in Canada, 1951-1977," in *Reflections on Canadian Incomes*, selected papers presented at the Conference on Canadian Incomes sponsored by the Economic Council of Canada, May 10-12, 1979, Winnipeg (Ottawa: Minister of Supply and Services Canada, 1980), Tables 2 and 3; and D. Normand, G. Hawley, and W.I. Gillespie, "In Search of the Changing Distribution of Income during the Post-War Period in Canada and the United States," *Public Finance* 38 (1983): 267-81, Table 3.

inequality depend on the index of economic inequality that is used. With this in mind, note that the Gini coefficient for adjusted broad income increased from 0.258 in 1961 to 0.290 in 1969, indicating, according to this index, that the distribution became more unequal.

Dodge

Dodge’s (1975) estimates of tax and expenditure incidence for 1970 can also be used to estimate fiscal incidence, as shown in Table 3-15. His results are similar to those obtained by Gillespie for 1970 in that adjusted broad income is more evenly distributed than broad income. However, Dodge finds a larger fiscal incidence effect for the lowest income group and a positive fiscal incidence effect for the bottom 59 percent of families, whereas Gillespie finds a positive effect in 1969 for only the bottom 47 percent of families. (However, this difference may be due to the broad groupings of families.)

**TABLE 3-15 Dodge’s Estimates of Fiscal Incidence,
Canada, 1970 (percentage)**

Distribution of Families by Income		Broad Income	Adjusted Broad Income	Fiscal Incidence
(lowest)	23.8	4.4	8.8	4.4
	20.8	12.3	14.8	2.5
	14.5	13.3	14.0	0.7
	17.9	21.5	20.9	−0.6
(highest)	22.9	48.6	41.5	−7.1

Source: D. Dodge, “Impact of Tax, Transfer and Expenditure Policies of Government on the Distribution of Personal Incomes in Canada,” *Review of Income and Wealth* 21 (1975): 1–52, Table 9.

Conclusions

This survey of tax and expenditure incidence reveals that there is a great deal of uncertainty about who benefits from government expenditures and who bears the tax burden. In the 22 years between Goffman’s study and Whalley’s survey, the boundaries of feasible effective tax rates have widened appreciably. The problems with measuring and allocating the benefits of most government expenditures, especially those on public goods, are severe and make the estimates of expenditure incidence tenuous. Econometric studies of tax and expenditure incidence contribute relatively little to our understanding of tax and expenditure incidence because of the lack of variation in tax and expenditure variables and because of the inherent complexity of general equilibrium models. Knowledge about tax and expenditure incidence has come to reflect the general state of our knowledge about the economy, gleaned from a variety of empirical studies and theoretical

models. To this point, advances in economic knowledge have mainly served to elucidate the range of possible outcomes. A frank recognition of the limitations of our knowledge seems to be the main conclusion to be drawn from this survey of incidence studies. However, one should not be unduly pessimistic about progress to date. Knowledge in any area as complex as the incidence field is bound to proceed slowly.

Having said this, a few general conclusions can be drawn from the studies surveyed. First, the research of Gillespie, Maslove, and Dodge indicates that the tax system is regressive over the lowest income range when tax rates are calculated using the broad income concept. The taxes responsible for this “regressivity” result are the property tax and the sales and excise taxes, which are assumed to impose a burden on the uses side. The more recent studies by Pipes and Walker and by Davies, St-Hilaire, and Whalley obtain “progressive” tax incidence results for three principal reasons: the income measures used to calculate tax rates include transfers; lifetime income is taken to be the appropriate income concept; and a smaller proportion of the burden from property and sales and excise taxes is assumed to be shifted on the uses side. Each of these issues is discussed below in turn.

The tax incidence studies reviewed here show that the tax system appears to be more progressive when the income measure used to compute effective average tax rates includes transfers, because this is the most important source of income for the lowest income group. In calculating effective tax rates, I favour the use of a comprehensive measure of income which includes transfers. (Whether one should include other components on government expenditure in the income measure depends on the confidence one has that these benefits can be measured accurately.) There are two reasons for favouring the use of an income measure which includes transfers. First, this income concept is the appropriate one for a differential tax incidence analysis. Differential tax incidence analysis is probably the best framework to adopt when analyzing the incidence of the entire tax system, since it avoids the macroeconomic effects inherent in an absolute incidence analysis, and it provides a more clear-cut picture of incidence than a balanced-budget incidence analysis, in which the increase in government spending resembles the current composition of government expenditures. The second reason is that, if transfers are excluded, astronomically high tax rates for the lowest income groups are obtained. Recall that Maslove obtains an average tax rate in excess of one hundred percent for the lowest income group. Policy makers and the general public would probably misinterpret this result as indicating that the poor pay more than they receive in income, or dismiss it completely as being nonsensical. For these reasons, I take a rather skeptical view of the “regressivity” results obtained by Gillespie, Maslove, and Dodge using broad income.

I find the evaluation of the incidence of the tax system on a lifetime basis very appealing. Since individuals make major decisions, such as career

choice, not on the basis of annual income but on long-term or lifetime income, I feel that the fairness of the distribution of the tax burden should also be judged on a lifetime basis. The work of Davies, St-Hilaire, and Whalley is a useful advance in this direction, and their results tend to indicate that the tax system is significantly more progressive on a lifetime basis than on an annual basis. (However, to argue that the lifetime framework is best for evaluating the fairness of the tax system does not mean that tax incidence analysis based on annual data has no place. First, the burden of temporary tax measures should be evaluated using annual incomes. Second, new permanent tax measures will have different effects on households during a “transitional” period according to the age of the household head, and these effects should be measured using annual data. Finally, the analysis of the tax incidence on a lifetime basis is in its infancy, and data for such analysis are only now being developed. Analysis based on annual data will be the mainstay of research in this area for some time to come.)

The tax system appears to be more regressive when more of the burden is assumed to fall on the uses side. In the analyses of Gillespie, Maslove, and Dodge, the sales, excise, and property taxes are found to be responsible for the regressivity of the tax system. These taxes are regressive because total expenditure as a proportion of income falls as income rises, especially on an annual basis. Pipes and Walker obtain a progressive tax rate structure, because they adopt the Browning and Johnson analysis, which allocates all of the burden of sales and excise taxes in proportion to the receipt of labour and capital income. The burden of sales and excise taxes on the uses side can be ignored only if all households have the same budget share or if transfers are indexed (and if the indexation reflects each individual transfer recipient’s budget shares). Since neither of these conditions holds in practice, the Browning and Johnson analysis must be studied more closely and applied with greater care before the Pipes and Walker results can be accepted.

The entire burden of the property tax in the Pipes and Walker study and in Davies, St-Hilaire, and Whalley’s standard case is assumed to be borne by recipients of capital income, reflecting the “new” view of the incidence of the property tax. However, as argued above, the traditional view of the incidence of the property may be more appropriate if the supply of capital to the Canadian economy is responsive to the net rate of return earned on capital. The openness of the Canadian economy to international capital flows and the recent emphasis in empirical and theoretical research on the responsiveness of domestic savings rates suggest that the traditional view should not be dismissed so readily. It also suggests that the incidence of the personal and corporate incomes should be reassessed to take into account the responsiveness of the supply of capital to the Canadian economy.

To summarize, the regressive tax rate results obtained by Gillespie, Maslove, and Dodge are not convincing, because they use annual income, which excludes transfers. On the other hand, the progressive tax rate results obtained by Pipes and Walker and by Davies, St-Hilaire, and Whalley probably understate the burden on the uses side from sales and excise taxes and the burden shifted to labour, because of the responsiveness of capital to taxation. Hence, they probably overestimate the progressivity of the tax system. Thus, the truth probably lies somewhere between the two extreme positions.

The studies by Gillespie and Dodge indicate that the distribution of the benefits from government expenditures are pro-poor and that the combined effects of government expenditures and taxes redistribute income from high-income groups to low-income groups. However, the problems plaguing comprehensive expenditure incidence studies are manifold, and these results must be treated with a great deal of skepticism. Specific studies of education, health, and social security spending hold the greatest promise for advancing our understanding of the distributional effects of government spending.

Notes

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1. See Bird (1979).
2. Canada, Department of Finance (1983), Tables 3 and 49.
3. See Boskin (1978) and Summers (1981).
4. See, for example, Break (1957) and Chatterjee and Robinson (1969).
5. See Krzyzaniak and Musgrave (1963); Cragg, Harberger, and Mieszkowski (1967); Gordon (1967); Spencer (1969); Dusanski and Tanner (1974); and Sebold (1979).
6. See Boadway and Bruce (1979).
7. See Arnott and MacKinnon (1977) and Dahlby (1982).
8. See Perry (1984), pp. 94–95 and 138–39.
9. See Kotowitz (1979) for a survey of empirical studies on the effect of taxes on wage rates.
10. See McDonald and Solow (1981).
11. See Shoven and Whalley (1984) for a survey of numerical simulation models.
12. The simulation models assume fixed supplies of labour and capital.
13. However, Brennan (1976) criticizes the Aaron and McGuire (1970) methodology and argues for the use of equal per capita benefit from public goods.
14. Some *ex ante* redistribution may occur if insurance companies are unable to charge higher premiums to certain identifiable groups with higher-than-average expected losses if this would be viewed as discriminatory and contravene equal rights legislation or social mores.
15. This notion was first formalized by Hochman and Rogers (1969).
16. Note that the benefits of in-kind transfers for the recipient may be worth less than the cost of the transfer to the government if the in-kind transfers cause the household to consume more of the subsidized good than it would if it had the same transfer in cash.

17. Calculations based on St-Hilaire and Whalley (1983), Table 5.
18. However, dividend income is more highly concentrated in the upper income group than is total capital income. In 1977, stocks represented only 0.2 percent of the wealth of households with money incomes less than \$3,000. This compares with 4.2 percent of wealth in stock for households with incomes over \$35,000 and 1.7 percent for all households. See Statistics Canada (1980), Table 21.
19. The last column of Table 3-8 shows that between 1961 and 1983, the tax rate for the lowest decile declined and that the tax rate increases for the fourth through the ninth deciles were about the same. The tax rate increase for the top decile was below the average increase.
20. This means that the "deadweight" loss due to the inefficiency caused by the tax is ignored. Ignoring these "deadweight" losses is common to all the tax incidence studies reviewed here.
21. See Wolfson (1980) for a critique of the incidence assumptions adopted by Pipes and Walker.
22. It can be shown, using Browning's methodology and the data from Tables 3-2 and 3-4, that neglecting the uses effects of the excise tax on alcohol and tobacco understates the tax rate borne by the lowest income group by 1.4 percentage points and overstates the tax rate on the highest income group by 2.4 percentage points. Although the tax on alcohol and tobacco is admittedly an extreme case, it does illustrate that the effects on the uses side cannot be ignored with impunity.
23. One problem in the measurement of fiscal incidence is the treatment of deficits or surpluses. Gillespie's main results and Dodge's results do not include the effects of public sector deficits or surpluses. If the public sector is running a deficit, this tends to overstate the net benefits from government insofar as the deficit results in higher real interest rates or higher future taxes. The extent to which ignoring the deficit affects the results can be gauged by comparing total adjusted broad income with total broad income. In Gillespie's study, adjusted broad income was 2.8 percent higher than broad income in 1969, and in Dodge's study it was 7.7 percent higher in 1970.
24. To obtain a consistent measure of fiscal incidence, one should multiply the percentage of adjusted broad income accruing to a group by the ratio of total adjusted broad income to total broad income before subtracting the percentage of broad income accruing to the group. I have not had access to Gillespie's figures for 1951 and 1961, which would allow me to do this, and therefore the figure for fiscal incidence is calculated in the manner reported in the text.
25. The reader is reminded that these figures must be interpreted with care. They should not be interpreted as indicating the net effect of government on the distribution of income because the pre-fisc measure of the distribution of income is probably a very poor approximation to the distribution of income that would prevail in the absence of government and because the government's regulatory policies that do not involve expenditures or taxes may have large impacts on the distribution of income.

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Income Security in Canada

BERNARD FORTIN

Introduction

The essence of politics is redistribution, and political conflicts centre on matters of distribution.

Karl Brunner

Income redistribution activities underwent tremendous development in Canada and most western countries between 1965 and 1980. There was an increasingly widespread nationalization of various kinds of assistance to individuals and families, with government intervention replacing private charity organizations and family support on a growing scale. New programs were set up, the scope of existing programs was extended and benefits were increased.

These programs in Canada did not expand at a regular pace throughout the period. Between 1966 and 1975, often called the "golden age of income security," the Canada Assistance Plan, Guaranteed Income Supplement, the Canada Pension Plan, the Quebec Pension Plan and Quebec family allowances were introduced, major reforms were instituted in the Unemployment Insurance Act, and federal family allowances were overhauled. The United States introduced selective health insurance programs aimed at the elderly and low income groups (Medicare and Medicaid) during this period, but the Canadian and Quebec governments followed the lead of European countries in opting instead for a universal insurance program.¹ As a result, the share of income security programs in the net national product (NNP) rose from 8.6 to 13.8 percent between 1966 and 1975.² During the same period, the public sector as a whole also grew considerably, with the proportion of total government expenditures in the NNP increasing from 35 to 46.5 percent. Because income security payments grew at a faster rate than overall public sector spending, the share of government expenditures on transfer programs increased from 24.5 to 29

percent over this period. Bird (1979) points out that 68 percent of public sector growth in the economy between 1965 and 1976 can be traced to education and social security expenditures alone.

This expansion of income security policies did not, however, continue beyond 1974–75. Beginning in 1975, the federal government had to introduce precipitous restrictions and changes that reduced payments stemming from 1971 changes to the Unemployment Insurance Act and cut back on family allowance payments in favour of an income-tested selective tax credit program for children. The major reform proposals presented in the *Background Paper on Income Support and Supplementation* (Canada, Health and Welfare, 1975) were rejected by many provinces.

Similarly, provincial and municipal programs have undergone relatively few changes since the mid-1970s. In most provinces, major government interventions have often been limited to periodic adjustments to benefit levels designed to counteract an inflation-induced decline in recipients' purchasing power.³ Attempts have been made to create programs to provide income supplements to low income workers, such as the Family Income Plan set up in Saskatchewan in 1974, the Quebec Work Income Supplement Program in 1979 and the Manitoba Child-Related Income Support Program introduced in 1981. These programs have nevertheless remained relatively modest in scope, with total benefits paid out amounting to less than \$42 million in 1982–83.

Two factors may be at the root of this slowdown in program expansion. First, the high economic growth rates of the 1960s had given way by 1973 to a period of stagflation characterized by high unemployment and inflation and by slow economic growth. For governments, this meant sluggish real growth in revenue and a marked rise in spending on income support and protection, such as unemployment insurance and social assistance. It became obvious that rigorous budgetary constraints would invariably force governments to restrict the extension of existing programs.

Adjustment to this contraction was thus characterized more by reallocation of income security resources than by an expansion of programs (Traversy, 1980). In fact, the increase in income security spending between 1976 and 1979, which was more or less in step with the decline in economic activity, was to a great extent attributable to indexation of benefit levels and an increase in the number of clients. Following the great recession of 1981–83 and the continuing high unemployment rates, this reallocation of resources resulted in a dramatic increase in government funding earmarked for wage subsidies and direct job creation. Political pressure in favour of anti-unemployment programs has limited the amount of funding available to extend cash transfers to individuals and households. One of the lessons to be drawn from changes made to programs since 1975 is that it is more difficult, both socially and economically, to redistribute national income in a period of economic contraction.

Secondly, the expanding economic role of the welfare state between 1965 and the mid-1970s stimulated a more acute awareness of the attendant economic costs associated with both transfer expenditures and their financing. In a number of countries, political resistance to what many perceived as excessive growth of the welfare state has been expressed in the election of conservative governments, for example, in Britain, the United States and Norway. In Canada, several political developments in 1983–84 illustrate this trend. In British Columbia, immediately after he was returned to office in 1983, Premier William R. Bennett announced a series of policies designed to reduce the number of civil servants by 25 percent, cut spending on a number of programs, and abolish several government commissions. In Quebec, the same trend recently emerged in the form of a political decision to reform tax and transfer systems under provincial jurisdiction with a view to reducing deadweight loss. The Quebec finance minister even announced the publication of a white paper on the matter. At the federal level, the Progressive Conservative government under Prime Minister Brian Mulroney indicated its intention to review the universality of certain social programs.

This study then, begins with a breakdown of spending on income security in Canada. It next analyzes the nature and magnitude of the resulting economic costs, giving particular emphasis to the impact of the system on work disincentives. The third section looks at some of the advantages provided by income security, especially its contribution to overcoming income inequality. The study concludes with a discussion of the stakes involved in any proposal to reform the present system.

Analysis of Income Security in Canada

The income security system is assigned two central goals: support of the income of households whose resources are regarded as inadequate; and protection of the income of persons who are retired or who face certain socio-economic risks such as unemployment, illness, occupational accidents, death of a spouse, and so on. To justify the system, governments have more or less explicitly invoked three fundamental principles:

- an individual's economic well-being must not depend solely on his contribution to production or his personal resources;
- private intra- and inter-family transfers (private charity) are not enough to ensure each individual a minimum standard of living; and
- private insurance arrangements are incapable of adequately protecting personal income against socio-economic risks.

Yet few scientific studies have analyzed the limits of private transfers and insurance in terms of support and protection of family incomes or have evaluated the effect of government programs on them. This issue is examined later.

Following the federal white paper on income security (Canada, Health and Welfare, 1970), it is useful to distinguish three kinds of transfer based on eligibility criteria:

- demogrants made to certain categories of households, regardless of their financial position, such as family allowances and the old age pension;
- social assistance programs, where benefits depend on established financial need, and are income tested, such as the guaranteed income supplement and provincial social programs; and
- social insurance programs, in which premiums (excluding health insurance) are determined in part by previous contributions and earnings, for example, unemployment insurance and the Canada Pension Plan.⁴

Contrary to widely held belief, “selective” social assistance programs are not necessarily more effective in redistributing income to poorer households than “universal” demogrant programs. The latter are able to redistribute net tax revenues by levying taxes or contributions on higher income groups in excess of benefits paid out (Kesselman, 1980). A redistributive analysis must therefore take the impact of program financing arrangements into account. Moreover, there are no grounds for believing social insurance programs are founded on rigorous actuarial principles. The connection between the present value of contributions and the value of benefits expected is often quite tenuous, and hence these programs generally contain a large element of hidden subsidies or taxes (Boadway and Kitchen, 1980).

The Canadian income security system now comprises over 80 programs (Interprovincial Conference of Ministers Responsible for Social Services, 1980, p. 2). This large number is to a certain extent the result of the diversity of programs under provincial jurisdiction. Each province or territory has a basic assistance program; three provinces provide short-term assistance through municipalities; each province or territory offers a workmen’s compensation program, and so on. Still, the federal government in 1979 financed more than 65 percent of income security spending (if cost-shared programs are taken into account), while provincial and municipal governments contributed 33 percent and 2 percent of the total, respectively. Table 4-1 gives estimated spending under the major programs for selected years. Text discussion focusses primarily on the figures for 1979, which was the last year of relatively “normal” economic conditions. Hence, the results are not too distorted by the swelling in unemployment insurance and social assistance expenditures observed between 1980 and 1983 in the wake of the recessions in the spring of 1980 and in 1981–82. The estimates do not incorporate assistance in kind relating to certain goods and services such as housing, medication, ambulance services, dental care for children and legal aid, since data on these are not currently available.

According to the estimates in Table 4-1, \$34.2 billion were spent on income security in 1979, representing more than 14 percent of the NNP.

By contrast, income security expenditures in the United States were slightly over 10 percent of the NNP in 1979 (Danziger, Haveman and Plotnick, 1981). The difference arises in part because the health insurance plan in the United States is reserved for the aged and persons in need, because social assistance programs there are limited to a narrower range of household categories, and because unemployment insurance programs generally have stricter eligibility requirements and provide lower benefits than those in Canada. Several other features of the present system are also revealed in Table 4-1, as noted below.⁵

The system distinguishes several categories of households. For example, there are separate programs for the elderly, the disabled, war veterans, persons suffering occupational injuries, the blind, the unemployed and low income workers. This categorization is accounted for in part by a political decision to distinguish between families on the basis of ability to work. With the exception of health insurance, all social insurance programs provide benefits determined in part by previous participation in the labour market. At the same time, categorization of programs also makes it possible to reduce financial costs (Akerlof, 1978).

In 1979, social assistance expenditures (\$7.405 billion) aimed directly at low income families accounted for only 22 percent of total spending on income security. These expenditures were much lower than social insurance expenditures, which constituted almost 60 percent of the total. Even though social assistance allocated a larger share of benefits to the needy, social insurance programs probably helped a greater number of people to achieve income levels above the poverty line.

Transfer programs (except for the child tax credit and provincial tax rebates listed in Table 4-1) are not integrated into the tax system. The approach adopted by Canada consequently appears quite remote from the notion of negative income tax that would integrate taxation and transfers within a single system. The lack of any integration is manifested particularly in the choice of a base unit. Thus, while most benefits under social assistance programs are paid to households, personal income tax is determined on an individual basis (after certain basic exemptions). Moreover, in general, the definition of income used in selective transfer programs does not correspond to taxable income (Rea, 1979). Furthermore, government publications on marginal tax rates do not encompass implicit marginal rates of transfer programs. The taxing of benefits paid under programs such as unemployment insurance, old age pension and government pension plans does, however, partly make up for the omission.

In view of the generally high implicit rates at which social assistance programs are taxed (Interprovincial Conference of Ministers, 1980), programs explicitly intended to ensure low income workers an income supplement appear quite limited. As emphasized above, some small-scale programs, such as the Saskatchewan Family Income Plan and the Quebec Work Income Supplement Program, provide benefits directly to socio-

TABLE 4-1 Income Security Expenditures in Canada, Selected Years^a

	1966-67	1972-73	1978-79	1982-83 ^b
	(\$ millions)			
Social Insurance				
Canada and Quebec pension plans	0.1	273.3	1,800.4	4,082.7
Unemployment insurance	352.6	1,985.4	4,474.3	8,575.4
Veterans' allowances and pensions	299.5	327.7	673.2	991.7
Workers' compensation	154.8	281.6	768.4	1,951.6
Health insurance, all levels of government	2,063.2	5,538.9	12,847.5	22,330.0 ^b
Subtotal	2,870.2	8,406.9	20,563.8	37,931.4
Social Assistance				
Guaranteed income supplement	39.6	742.8	1,234.0	2,416.3
Child tax credits	—	—	874.0	1,492.7
Spouse's allowances	—	—	126.0	221.5
Blind and disabled persons' allowances ^c	54.2	9.9	1.8	n.a.
Status Indians' social services	—	46.2	104.0	248.7
Provincial and municipal welfare and income supplement programs, provincial tax credits and rebates ^d	696.6	1,597.9	5,065.0	6,156.0 ^b
Subtotal	790.4	2,396.8	7,404.8	10,535.2
Demogrants				
Old age security	1,033.4	1,781.5	4,130.6	7,005.3
Family allowances	555.8	548.6	2,093.0	2,230.6
Youth allowances and Quebec schooling allowances	66.0	82.8	—	—
Quebec availability allowances	—	—	—	—
Subtotal	1,655.2	2,412.9	6,223.6	9,244.8
Grand Total	5,315.8	13,216.6	34,192.2	57,711.4

TABLE 4-1 (cont'd.)

Sources: For the fiscal years 1966-67, 1972-73 and 1978-79, see Statistics Canada, *Canada Year Book, 1980-1981* (Ottawa: Supply and Services Canada, 1982), Chap. 8, Table 8.16; occupational and institutional training and Canada Assistance Plan (CAP) benefits other than direct financial assistance are excluded. For fiscal year 1982-83, see Continuing Committee of Officials Reporting to Deputy Ministers of Social Services, *Inventory of Income Security Programs in Canada* (Ottawa: forthcoming); and estimates by the author.

- a. Federal payments, except where otherwise indicated, fiscal year ending March 31.
 - b. Preliminary estimate.
 - c. Federal-provincial cost-shared programs.
 - d. Includes federal-provincial cost-shared direct assistance programs under the CAP. Direct financial assistance provided under the CAP totalled \$21 million in 1967, \$1.027 million in 1973 and \$2.179 million in 1979.
- n.a. Not available.

demographic categories of households having modest family incomes. Of course, assuming these worker are occasionally unemployed, they may receive a further supplement to their annual wage income in the form of benefits from unemployment insurance or provincial social assistance plans.

Though Table 4-1 omits several in-kind transfers, the latter are undoubtedly much less important for income security than are cash transfers. Furthermore, universal in-kind assistance far exceeds selective income-tested in-kind assistance (Lefebvre, 1982). The latter form of assistance is more widely used in the United States where, in 1981, more than 65 percent of social assistance benefits were paid out this way (Garfinkel, 1979). The Medicaid program, food stamps, and other food and housing assistance programs absorbed almost all money spent on in-kind assistance.

In 1979, financial assistance provided through the Canada Assistance Plan (CAP), popularly known as “welfare,” constituted only 6.3 percent of total spending on income security. In 1979–80, 5.6 percent of the population received benefits under this program (Kahn and Kamerman, 1983). In descending order, the largest programs in 1979 were: health insurance, old age security, unemployment insurance, CAP and family allowances. If the structure of these programs remains the same, old age security, government pension plans and health insurance can be expected to gain in importance as the population ages and life expectancy is extended.

Lastly, a recent study (Kahn and Kamerman, 1983) on the relative generosity of social assistance programs for families in eight industrialized countries placed Canada somewhere in the middle in terms of redistributive activities.⁶

Income Security Costs

Principles of Evaluation

Redistribution policies almost invariably favour some groups in society to the detriment of others.⁷ This fact partly explains why such policies are often highly controversial and why consensus is so difficult to achieve. Since there is no objective way to compare the benefits obtained by one person to the costs incurred by another, economics cannot demonstrate that one kind of income distribution is necessarily better than another.

However, economics can help shed light on the impact of income security policies according to their effect on the fight against poverty, social inequalities and income variability. Moreover, it can also help evaluate the economic costs. The latter would appear to be an extremely useful task, since costs often tend to be hidden or diluted, because they are distributed over a larger number of people, and only really make themselves felt in the long term.

The redistribution system gives rise to economic costs, stemming from both financing and expenditure methods. In general, three kinds of costs related to transfer programs can be distinguished: administrative costs, compliance costs and inefficiency costs. According to the group that studied the social security system in Canada (Interprovincial Conference of Ministers, 1980), the administrative costs of transfer expenditures vary from one program category to another:

This proportion [administrative expenditures as a proportion of total expenditure] was lowest for demogrants at .5%; it was 3.5% for social insurance, and 7.5% for income related programs. This trend reflects increasing complexity of eligibility determination and management (p. 39).

Program financing also generates administrative costs. Usher (1983) estimates the administrative costs for all taxes and contributions levied at the federal level at 1.3 percent of total receipts.

These costs do not account for all direct costs arising from tax collection and transfer expenditures. Taxpayers, for example, must spend numerous hours reading, studying and filling out income tax returns, and many retain the services of accountants or tax specialists in order to take advantage of certain exemptions or deductions. Other compliance costs include the use of the postal service and banking system. Unfortunately there are only a few studies of this subject. It has been estimated (Browning and Browning, 1983) that, in the United States taxpayers spent 400 million hours just filling out their personal income tax forms. Adapting this figure to the Canadian population yields a total of 43 million hours, for a cost of \$430 million, based on an hourly average gross wage of \$10 in 1981. This amount corresponds to 1 percent of government receipts from personal income taxes. Of course this is a conservative estimate for compliance costs for this tax category. Analogous costs are also borne by beneficiaries of transfer programs when they are required to comply with certain eligibility conditions. To the extent that they discourage people from participating in the programs, some of these costs may partially offset the resulting inefficiency costs. The requirement that beneficiaries be actively seeking work (as in the unemployment insurance program and certain social assistance programs) may encourage people to take jobs. However, few studies have concluded that these constraints are effective, given the administrative costs they entail.

The most onerous costs for society are inefficiency costs (or deadweight losses). These costs arise from incentives created for individuals or households to change their behaviour in order to receive more benefits from various programs or to reduce their tax payments to finance programs. Accordingly, transfer programs encourage certain types of untaxed activity aimed at lightening the additional tax burden imposed, regardless of the real productivity of individual behaviour. Parallel to this, they favour activities which, although less socially useful, increase the amount

of benefits individuals may receive. Of course, it would be misleading to take only the "expenditures" aspect of transfer programs into account when evaluating their attendant deadweight loss. For example, claims that the universal nature of the old age pension does not generate any inefficiency costs overlook the fact that the tax increase required to finance the system is one source of welfare costs.

It is important to distinguish between the value of transfers as such and the welfare costs of income redistribution. The legend of Robin Hood provides a simple illustration of this distinction. When Robin and his men descended upon rich travellers in Sherwood Forest and relieved them of their money in order to redistribute it to the poor, there was no short-term deadweight loss, since this involved a mere transfer of resources from one social group to another. Yet such costs could have appeared in the long term if the wealthy began to use scarce resources to reduce the amount of money they were losing: they might have been encouraged to retain armed men for protection, to avoid travelling through Sherwood Forest, to emigrate to other regions to escape Robin's clutches, or to reduce their business activities when their private return fell too low, and so on. At the same time, this redistribution policy could have encouraged some needy households to move closer to Sherwood Forest in order to benefit from the transfers, or to reduce their labour supply since the level of transfer was diminished with employment income, or to live separately since substantial transfers were given to single women with dependent children, and so on. All these activities engendered economic costs, because they used resources for purposes with a greater private return than their social return.

The welfare state inevitably weakens the link between the social contribution of individuals to production and their personal remuneration, thereby undermining the incentives needed for efficient economic activity. At the margin, the wedge between the social and private return from individual behaviour appears as marginal tax rates (or subsidy rates). These rates may vary from one activity to another, especially given the great variety of taxes now being levied and the different tax bases to which they apply. Marginal rates also reflect the reduction in the amount of benefits the beneficiary of an income security program must accept with an increase in gross income.

This is illustrated in the case of single persons aged between 30 and 64 years, living in Quebec, who had no employment income in 1983. In that year, they would have received \$4,932 in the form of social assistance and property tax refund. If they had worked full time at the minimum wage of \$4 an hour, they would have received a gross income of \$8,000. However, because of the reduction in the transfers for which they were eligible, their disposable income would have grown by only \$2,520. In reality, they would have worked for only \$1.26 an hour instead of the \$4 paid by the employer, for an implicit tax rate of 68 percent.⁸ In the case of

a couple aged over 30 with two children under six years of age, the rate would climb to 79 percent. This example shows that subsidizing non-work has the same effect as taxing work. In addition, it demonstrates that the marginal tax rate on employment income to which low income earners are subject results from the combined effect of the various forms of assistance for which each individual is eligible. In some cases, this rate is augmented by the personal income tax rate.

During the 1960s and 1970s, economists generally considered the deadweight loss attributable to transfers and their financing to be relatively negligible (Rea, 1974). However, recent events, from both the theoretical and empirical point of view, have led many to change their opinion.⁹

The level of marginal tax rates These have risen considerably in most Western countries since the 1960s, largely in response to increased social spending. Now, deadweight loss tends to increase with the square of the tax rate (Browning and Browning, 1983). Therefore, if the tax rate is doubled, the resulting deadweight loss tends to be quadrupled. The economic interpretation of this finding is simple. At the margin, a sustained rise in tax rates discourages activities having an increasingly higher economic value. Thus, if a marginal increase in tax rates produces a negligible deadweight loss when the original tax rate is zero percent, it can generate a very high loss when the rate reaches, say, 60 percent.

Akerlof (1978) elegantly demonstrates the inevitable trade-off any redistribution policy faces between the minimum income guaranteed by the policy and the marginal tax rates, given the level of other government expenditures. In the simplest case, Akerlof assumes that the policy takes the form of a guaranteed annual income combined with a proportional income tax at rate t . From this, he deduces the basic relation $t = r + g$, where r is the guaranteed annual income as a percentage of the average household income, and g measures the share of government expenditures other than transfers in total income.¹⁰ Consequently, if the government wishes to guarantee a minimum annual income equal to 50 percent of average income when other government expenditures contribute 20 percent to the total income, it must choose a tax rate of 70 percent.

Akerlof's relation further reveals that in the event the government chooses to guarantee a minimum income corresponding to the average income, it will have to tax households at a rate of 100 percent, assuming no other government expenditures. If this tax rate were adopted, aggregate economic output could be expected to be seriously compromised, unless there is assumed to be either a flourishing underground economy or a massive government intervention to compel individuals to work. Akerlof's relation thus illustrates the conflict between equity (the level of r) efficiency (the level of t) and the scale of the public sector (level of g). It helps us understand why the additional cost of redistributing one dollar increases in proportion both to the income guaranteed by the program and also

to other government expenditures. In other words, this equation illustrates the limits to income redistribution.

If the transfer program is restricted to certain categories of households, such as those whose head is unable to work, the aged, heads of single-parent families, and so on, the conflict can be attenuated, as Akerlof shows.¹¹ Categorization of transfer programs in Canada and elsewhere thus enables governments to prevent an even more pronounced increase in tax rates required to finance transfers and other government expenditures. However, categorization does create other problems. By paying transfers to specific groups only, the government encourages some households to modify their behaviour to conform with one of these groups. Moreover, categorization increases administrative costs arising from the tagging process. Lastly, it does not always completely satisfy the criterion of horizontal equity. According to this criterion, persons who are similar from the point of view of their resources and needs must be given identical treatment with regard to their eligibility for programs and money received as transfers.

Variability in tax rates Welfare costs associated with tax rates do not depend solely on the rate level but also on the rate variability (Ballard, Shoven and Whalley, 1982). In fact, variability multiplies the possibility of distortions in behaviour. The development of selective transfer programs, the progressivity of personal income tax and lack of coordination, both between transfer programs and with the tax system, have caused numerous fluctuations in the curve that relates marginal tax rate with gross income. Also, the tax rate curves generally vary depending on the kind of household and on the province. These factors tend to raise the deadweight loss associated with transfer programs.

Long-term vs. short-term effects The effects of programs and their financing become more acutely apparent in the long term because of time lags in information and behaviour. There is a tendency to think that a worker employed at a given job has little choice as to the hours of work, which are generally set by the employer. In the long term, the worker can adjust his labour supply in many ways: part-time rather than full-time work, temporary rather than permanent work, greater instability between jobs, longer inactive periods, reduction of overtime, reduction of the retirement age, and so on.

Moreover, while these alternatives may be limited for the individual in isolation, they are much less limited for society as a whole. Over the long run, institutions do adapt to changes in incentives. For example, the average work week was reduced from 59 to 38 hours between 1900 and 1980 in the Canadian manufacturing sector, and the participation rate of workers aged 65 and over fell from 28 percent in 1966 to 15 percent in 1979. The causes of these phenomena are probably quite complex. But

they show clearly that in time a society can adjust to socio-economic parameters, even if, at any given instant, an individual may have less room to manoeuvre.

Substitution effects An analysis of economic costs arising from transfer programs and their financing must be limited to substitution effects produced by the wedge between social return and private return. For example, when the government raises marginal tax rates to finance certain transfers, it creates two opposite effects on the incentive for a taxpayer to work. Decreasing net after-tax wages reduces the cost involved in giving up untaxed non-labour activities, and thus encourages the taxpayer to devote less time to working. This substitution effect is costly for society, since it diminishes the private return (net wages) relative to the social return (gross wages) from the labour supply. However, a rise in the marginal rate encourages individuals to increase their work activity so as to maintain their purchasing power. This income effect, equivalent to the effect of a lump-sum tax, which is independent of the individual's behaviour, does not create a distortion between social and private return, and is therefore not a source of deadweight loss.¹² Furthermore, at the aggregate level, the income effect of the tax tends to be counterbalanced by the income effect produced by transfer expenditures. In this case, the government actually gives with one hand and takes with the other.

The argument put forward here casts doubt on the conclusions reached by economists, such as Thurow (1983), who assert that taxation generates a negligible economic cost on the labour market since, empirically, the income effect tends to cancel the substitution effect, especially among males aged between 25 and 60 years.

Multiplicity of distortions Recent studies show that the distortion effects of transfers and taxes are not limited to the number of working hours. Lindbeck (1980) distinguishes nine kinds of "leakage" relating exclusively to the allocation of time to different activities:

- the choice between leisure and income;
- the intensity and quality of work;
- investment in human capital (education, occupational training, job seeking, etc.);
- geographic mobility of manpower;
- trade via barter;
- home production;
- job choice;
- the search for tax shelters; and
- the underground economy.

These effects are joined by a number of other distortions: choice of savings level, composition of financial portfolio, composition of the consumer

goods basket, risk taking, entrepreneurship, degree of capitalization of businesses, and composition of households. The list is long but certainly not exhaustive. It would be difficult — if not impossible — to quantify the overall importance of these distortions. Most empirical literature on the subject limits itself to analyzing one effect at a time. The recent development of computable general equilibrium models (see, for example, Shoven, 1983) offers hope of a better integration of the various distortions for purposes of analysis.

Taxes and trade The lower cost of transactions on the international markets and the gradual elimination of tariff barriers, thanks primarily to the General Agreement on Tariffs and Trade (GATT), have intensified competition between countries. This integration of national economies has increased the demand sensitivity of products subject to foreign competition. As a result, increases in tax rates in different countries have a stronger effect on trade volume, since it has become more difficult to shift the tax burden onto foreign importers through increases in relative prices. In other words, the opening up of economies has raised the welfare cost of taxes levied in individual countries.

The Swedish experiment with extremely high marginal tax rates — the average worker must bear a marginal tax rate of almost 73 percent if all taxes are included — is eloquent on this subject. Eltis (cited in Bénétou, 1983, p. 156) writes:

In Sweden, workers offset a fraction of tax increases with wage increases during annual contract negotiations, which reflects the Swedish wage-bargaining system. The market sector of the economy cannot offset these wage increases with price increases because Swedish goods must be competitive on world markets. . . . Since the market sector must pay higher wages and cannot raise prices, every time there is a tax increase, employment is reduced. (translation)

Even though the unions are not as strong in Canada as in Sweden, this analysis is relevant here insofar as the Canadian labour supply reacts negatively to increases in marginal tax rates. A similar analysis can be applied to the case of an increase in implicit tax rates due to transfer programs.

Evaluating Deadweight Losses from Income Security in Canada

In this section the evaluation principles developed thus far are applied in order to assess the economic costs associated with the Canadian transfer programs and their financing. First the level and variability of marginal tax rates are examined by integrating taxes and transfers. The effects of marginal rates on specific aspects of individual behaviour are then assessed. Space limitations restrict the study of taxes to personal income tax and

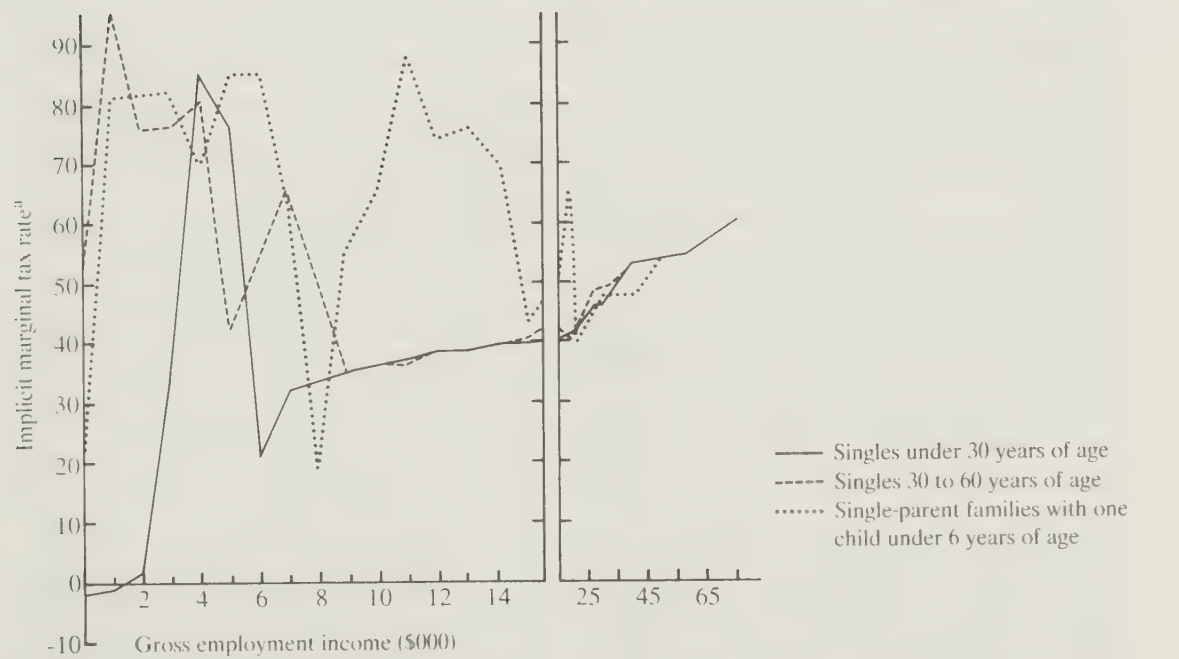
its impact on work disincentives. Finally, an attempt to assess the marginal welfare cost of income redistribution is made.

THE LEVEL AND VARIABILITY OF TAX RATES

Only one Canadian study analyzes the level and the effect of tax rates associated with the personal tax and transfer system, namely, that done for Quebec by the Quebec Department of Finance (Québec, 1985; B. Fortin and Rousseau with P. Fortin, 1984). This is supplemented by unpublished data for Ontario obtained by J.E. Cloutier of the Economic Council of Canada.

Figures 4-1 and 4-2 depict the curves for marginal explicit-cum-implicit tax rates as a function of gross employment income for different categories of households living in Quebec. Several conclusions can be drawn from an analysis of these figures. First, the marginal rate curves are generally quite high (ignoring certain exemptions) for low income earners — between 80 and 95 percent. They then fall to between 35 and 40 percent for those with higher incomes. In general, these rates correspond to employment income levels at which the individual is no longer eligible for income support programs, but becomes subject to federal and provincial marginal

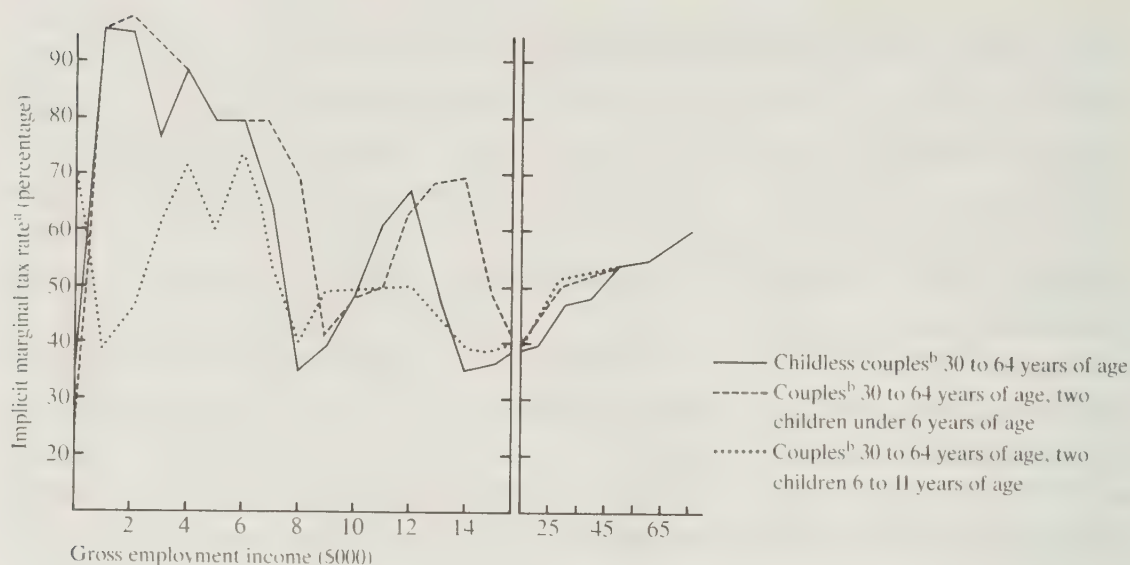
FIGURE 4-1 Marginal Rate for \$1,000 Increase in Employment Income for Single People, Province of Québec, 1983



Source: *White Paper on the Personal Tax and Transfer Systems* (Québec: forthcoming 1985).

a. These marginal rates include income tax, transfers and employment expenses. They do not include taxes on consumption and property taxes, since these do not influence employment income directly. It is assumed that households eligible for subsidies for child-care expenses do obtain them.

FIGURE 4-2 Marginal Rate for \$1,000 Increase in Employment Income for Couples, Province of Québec, 1983



- a. These marginal rates include income tax, transfers and employment expenses. They do not include taxes on consumption and property taxes, since these do not influence employment income directly. It is assumed that households eligible for subsidies for child-care expenses do obtain them.
- b. It is assumed that both spouses work and the income of one spouse is \$8,000.

Source: *White Paper on the Personal Tax and Transfer Systems* (Québec: forthcoming, 1985)

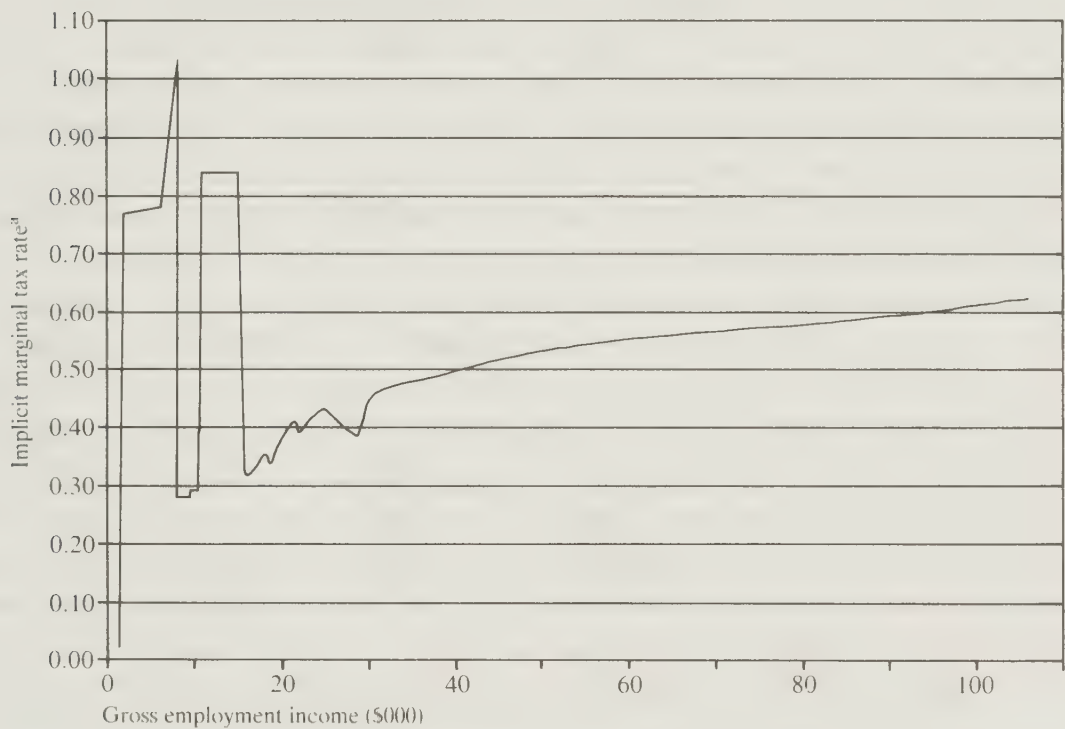
tax rates. Then, since the tax is progressive, the rates climb back up to a maximum of 60.4 percent at high income levels. The marginal tax rates reach even higher levels if taxes on consumption are taken into account.

Furthermore, the behaviour of marginal rates for low income earners, which varies from one category of household to another, fluctuates in a highly irregular manner. This phenomenon is caused by a lack of coordination among social assistance programs, and between these programs and the tax system. Break-even levels of income vary from one program to another. This feature is not peculiar to Quebec. Aaron (1977) and Lindbeck (1983) detect the same behaviour in marginal rates for the United States and Sweden. Lastly, in the case of single-parent families with one child under six, marginal rates generally hover between 60 and 90 percent up to the average industrial wage, and then merge with the tax rate curve.

Cloutier's findings for Ontario are difficult to compare with those obtained for Quebec. First, Cloutier's analysis assumes a monthly administrative period for social assistance programs, whereas the Quebec findings are based on the implicit hypothesis that the period is yearly. Secondly, the employment income intervals used in calculating the marginal rates are not the same. Lastly, Cloutier takes the unemployment insurance program into account, whereas the Quebec study assumes the individual is never eligible. Nevertheless, in the case of households eligible for income

support programs, the behaviour of marginal rates is comparable with the Quebec case. As a result, in the example of a single-parent family living in Toronto, as illustrated in Figure 4-3, the marginal rates inscribe an irregular, fluctuating curve generally within levels varying between 75 and 100 percent up to the \$16,000 level before merging with the tax rate curve. These findings are thus quite similar to those in the Quebec study. For purposes of evaluating deadweight losses from programs, there is an urgent need to carry out a coherent analysis of marginal rates by type of household and province of residence.

FIGURE 4-3 Marginal Rate of Selected Intervals of Increases in Employment Income, Toronto, 1983



a. Head of a single-parent family working 25 hours a week, 52 weeks a year, two children under six years of age, one child in daycare, rent \$3,600 per year.

Source: From unpublished data made available to the author by Eden Cloutier, Economic Council of Canada.

The analysis does demonstrate clearly, however, that marginal income tax rates are invariably much higher for lower income earners than for those in higher income brackets. These confiscatory rates create a veritable “poverty wall” that encourages low income households to remain dependent on social assistance programs. For many, it is simply not worth it to work. Inactivity or reduced participation in the official market appears as an economically rational choice. This choice can turn out to be morally costly. The individual loses the feeling that he can fend for himself or that he controls his future. This is the poverty trap.

High tax rates also promote the development of a parallel or underground economy that escapes program regulations. Private return from illicit practices increases as rates rise. Depending on the rates structure, illegal behaviour thus has a tendency to manifest itself both at low income levels and among high income earners. Mirus and Smith (1981) estimate that the underground economy represents between 5 and 20 percent of Canada's total economic activity. Éthier (1985b) confirms this order of magnitude in a more recent analysis of the phenomenon.

Universal programs such as family allowances and the old age pension do not introduce implicit tax rates among beneficiaries. However, as already mentioned, program financing does contribute to raising tax rates. Consequently these programs, too, are a source of inefficiency cost.

Social insurance programs also introduce tax (or subsidy) rates insofar as they are not based on rigorous actuarial principles. In other words, the value of benefits expected by individuals differs from the value of their contributions. If contributions are lower than expected benefits, individuals may receive a hidden subsidy that encourages them to adopt behaviour enabling them to become eligible for program benefits. Obviously an increase in tax rates (or a reduction in benefits) sooner or later becomes necessary to finance the actuarial deficit. This factor thus gives rise to an additional inefficiency cost. The same analysis applies to the unemployment insurance program and the Canada and Quebec pension plans.

Let us briefly analyze the case of unemployment insurance. According to the 1971 Unemployment Insurance Act, each work week during the eight weeks required for eligibility to the program entitled the beneficiary to a level of benefit equivalent of 2.8 weeks of full-time work (4.4 weeks in high-unemployment regions), yielding an income subsidy rate of 280 percent for workers whose participation in the labour market was irregular. The corresponding rate under the old act was only 33 percent. Several restrictions have been introduced into the act since 1975. However, in 1983 this rate was 180 percent on average.¹³ A rate this high encourages people who seldom work to enter the labour market. Moreover, by reducing the individual cost of unemployment, the program can encourage some people to extend the length of their periods of unemployment. Also, in firms experiencing a drop in demand, it favours adjustment through temporary layoffs rather than through a reduction of the work week. These changes in behaviour thus give rise to welfare costs, since their private return probably exceeds their social return. The introduction of contribution rates that vary with the frequency of layoffs in a given company might mitigate these effects.¹⁴

The Canada Pension Plan is not actuarially sound for the following four reasons (Boadway and Kitchen, 1980).¹⁵ First, since the plan did not go into effect until 1966 but began to provide full benefits in 1975, current beneficiaries of the plan receive, on average, more than they have contributed. In fact, generations born before 1948 will contribute to the

plan for fewer years than subsequent generations will. Second, in calculating benefits, the greatest weight is given to earnings in the last three years worked. Third, the plan provides for some benefits to family dependants (benefits to a surviving spouse and to orphans and dependent children of disabled pensioners). These benefits are not funded in the level of contributions. And, finally, contributors pay a flat rate, regardless of the probable length of their lives or presumed retirement age.

Analyzing implicit tax rates associated with the Canada Pension Plan turns out to be a highly complex exercise. In the case of individuals who do not perceive contributions as an “actuarial price” serving to finance future benefits, contributions to the plan constitute a veritable tax on their wage income. In the context of a partially funded plan, the absence of an “inter-generational” contract which would force future generations on the labour market to finance part of the benefits received by the elderly helps to weaken the actuarial connection between contributions and benefits. Future governments may modify the regulations applicable to public pension plans, and they have availed themselves of this right on many occasions in the past. Moreover, since expected benefits during the initial phase are far higher than the present value of contributions (plus a reasonable interest yield), the plan encourages people to enter the labour market in order to qualify for the pension, and at the same time tends to lower the retirement age. Lastly, since the plan gives the greatest weight to the last years worked in determining benefits, it implicitly subsidizes the work of people near retirement. Furthermore, the obligation to contribute to the plan as such may give rise to a welfare cost in the sense that it constrains individuals’ choices.¹⁶ In addition to its effects on labour supply, the Canada Pension Plan may also affect savings choices (Boadway and Kitchen, 1980).

MARGINAL TAX RATES AND LABOUR SUPPLY

There is a large body of empirical studies on the labour supply behaviour of individuals. These analyses are based on cross-sectional micro-data, or on the results of social experiments with guaranteed annual income carried out during the 1970s in certain North American cities or regions (New Jersey, Seattle-Denver, Gary, and Manitoba).¹⁷

The results vary depending on the demographic subgroup and on the study. In a survey of non-experimental studies, Moffitt and Kehrner (1981) find that compensated wage elasticities measuring the percentage effect on the labour supply of a 1 percent increase in the net wage rate at constant real income varies in general between zero and 0.34 in the case of adult males, and between zero and 1.2 in the case of adult females. For the population overall, Browning and Browning (1983) retain a compensated wage elasticity of 0.3 as plausible. Total income elasticities arising from wage increase, meanwhile, vary between zero and -0.34 for adult

males and between -0.06 and -0.81 for adult females. According to Moffitt and Kehrer, these findings mean that the introduction of a transfer program defined by a guaranteed income equivalent to 75 percent of the poverty line at \$3,000 (1967 dollars) and a 50 percent marginal tax rate reduces the labour supply of males eligible for the program by between zero and 22 percent, and that for females by between 11 and 85 percent.

The findings from experimental studies generally indicate lower elasticities: substitution elasticities for men and women between zero and 0.16 and between 0.08 and 0.42, respectively, and total income elasticities for both groups between zero and -0.09 and zero and -0.34, respectively. The preliminary results of the Manitoba Basic Annual Income Experiment appear to confirm this order of magnitude (Swidinsky and Wilton, 1983). This lower response can be accounted for in part by the limited duration of the studies; the reaction probably would have been greater if the beneficiaries had been able to receive benefits on a permanent basis.

This short analysis shows that labour supply elasticities still are not known with great precision. Indeed, the findings are sensitive to the methodology used and the sample chosen. Hausman (1981), in a highly controversial study, develops sophisticated econometric techniques that take into account different levels of marginal income tax rates due to the taxes and transfers to which individuals are subject. He arrives at much higher elasticities than those usually obtained in the literature. According to his findings, the compensated wage elasticity, calculated at the mean of the sample of people who worked, is 0.6 or double that proposed by Browning and Browning (1983). According to Hausman, the presence of marginal rates reduces the male labour supply by almost 8 percent and the female supply by about 30 percent in the United States. Blomqvist (1983) applies Hausman's methodology to the case of adult males in Sweden, where income tax is more progressive than in the United States. According to his findings, income tax in Sweden reduces the adult male labour supply by almost 12 percent. His analysis also reveals the fact that the female labour supply is generally more sensitive to economic conditions than the male supply. This can be partly explained by the fact that home production is still regarded by a number of women as an acceptable alternative to working in the official labour market.

A recent study on Quebec (Fortin, 1983) shows that, of all categories of households, the behaviour of single-parent families, the heads of which are almost exclusively women, is most sensitive to social assistance benefit levels. A 10 percent rise in benefit levels would bring about a 14 percent expansion in this category of beneficiaries. Three factors may account for this. First, some heads of single-parent families no longer have any interest in the labour market given the high level of the implicit tax rate. For many, domestic work and illegal work may become a substitute for working in the official market. Second, some women choose to have children without officially living with a spouse, or they may decide to live separately

from their spouses, especially if living together is already fraught with difficulties. Lastly, some couples live together, but do not declare the presence of a spouse. Given current benefit levels (in 1983, the head of a single-parent family could receive \$7,168 a year from social assistance to pay for basic needs), the level of the implicit tax rate, and the presence of labour costs, it is not surprising that 60 percent of single-parent families with at least one child below 18 years of age drew social assistance benefits in Quebec in 1983. The proportion was as high as 80 percent for separated or divorced mothers under 30 years of age.

In the United States, several studies¹⁸ show that the development of social programs — especially the Aid to Families with Dependent Children (AFDC) program, of which single-parent families are the principal clients — was linked to a wave of child neglect and illegitimate births, particularly among the black minority. The proportion of two-parent black families in the total of families in this category fell from 75 percent in 1966 to 54 percent in 1980. Among whites, the proportion fell from 89 to 85 percent during the same period.¹⁹

EVALUATING THE WELFARE COSTS OF MARGINAL TAX RATES

In seeking to evaluate the welfare costs arising from marginal explicit-cum-implicit tax rates, economists have invoked the concept of deadweight loss. This entails measuring the maximum amount individuals are prepared to pay to have their tax levied in the form of a lump-sum tax, independent of individual behaviour, rather than through the existing tax and transfer systems.²⁰ For the economist, this concept is much more fundamental than the measure of the impact of programs on the desired labour supply. It has recently been used by several authors to quantify the average and marginal costs arising from tax rates.

Browning (1978) was the first to use the concept of deadweight loss to evaluate the marginal welfare cost of income redistribution in the United States. However, Browning's analysis is limited to work disincentives. As such, it probably underestimates the real marginal cost of the operation. Assuming that transfers are made via a negative proportional income tax defined by a guaranteed annual income and a constant marginal tax rate, his estimates indicate that the marginal welfare cost of redistributing an additional \$1 million from the rich to the poor in 1974 varied between 30 and 40 percent of that amount, depending on the parameters used. For example, setting compensated wage elasticity at 0.3, a marginal administration and compliance cost of 4 percent, a basic benefit level set at 40 percent of average income and hence a marginal rate of 40 percent (Browning implicitly assumes no other government spending), he obtains a marginal welfare cost of 44 percent. This means that 44 percent of the amount redistributed simply "disappears," primarily because of disincentive effects on the labour supply. The marginal cost would be greater in the case of a progressive income tax.

Hausman (1981) concludes that, in the United States in 1975, each additional tax dollar levied on individual income and redistributed uniformly over the whole population through a universal program incurs a marginal cost of approximately \$0.40 owing to labour supply distortions. Using a computable general equilibrium model, a second study (Ballard, Shoven and Whalley, 1982) indicates a marginal cost of between \$0.34 and \$0.48 for the same operation, this time financed by a weighted average of all taxes and taking savings distortions into account. This study assumes that the compensated wage elasticity at the aggregate level varies between 0.3 and 0.5, with an interest rate elasticity of savings between zero and 0.4. According to these authors, replacing all U.S. taxes with a proportional income tax which would finance the same tax level would eliminate 60 percent of the economic cost associated with taxes. The gains would be even larger if the tax system were replaced with a tax proportional to consumption.

Only one Canadian study attempts to assess the welfare costs associated with the tax and transfer system, based on a computable general equilibrium model (B. Fortin and Rousseau with P. Fortin, 1984). This research unfortunately is limited to Quebec. The model assumes that Quebec is a small open economy, characterized by a high mobility of goods and capital and a low international mobility of labour. In this analytical framework, the burden of tax rates is essentially supported by Quebec residents and in particular by the labour factor, regardless of the kind of tax. According to preliminary results, the welfare cost of taxes on labour supply is close to 27 percent of all explicit-cum-implicit taxes. The marginal welfare cost of one dollar in taxes redistributed to households by lump-sum transfers would be more than \$0.56.²¹ The compensated wage-elasticity assumed is somewhere around 0.3 at the aggregate level. These higher results can be accounted for in part by the presence of higher marginal rates in Quebec compared with those in the United States, and by the small, open nature of the Quebec economy. Since the public sector is larger in Quebec than in Canada as a whole, a lower marginal cost could be expected for Canada than for Quebec. Nevertheless, Usher (1983) estimates the economic cost of one additional dollar of transfers at close to \$0.58 in Canada based on an ingenious and quite simple model of the national economy. However, Usher's assumptions are difficult to compare with those of the Quebec study.

No matter what the exact figures are, it becomes increasingly obvious that welfare costs associated with taxes and transfers cannot be ignored, whether the programs are financed through contributions or from general government receipts. These figures illustrate the growing importance of the "leakages" entailed in redistributing income from one group to another in society. In fact, there is a critical redistribution level beyond which any additional dollar redistributed from the rich to the poor reduces the welfare level of both groups, owing to the decline in aggregate economic activity.

At this level, the marginal cost of redistribution becomes infinite. The Canadian system is probably still far from reaching this situation. However, a recent study (Stuart, 1981) on Sweden concludes that this point may have been surpassed in that country. Indeed, again in connection with the Swedish case, Lindbeck (1983) asserts:

Market price distortion due to monopoly, monopsony, monopolistic competition, oligopoly, etc. — which have worried economic theorists so much for such a long time — are usually insignificant as compared to these policy-implemented factor price distortions. Whereas the former often seem to create a wedge between price and marginal costs of some 5 to 10 percent, the marginal wedges between wage costs for firms and the returns to the individual are, as we have seen, often about 200 percent and occasionally more than 500 percent.

The Advantages of Income Security

Evaluation Methodology

Although measuring the costs of income security poses a number of methodological problems, measuring the advantages it yields raises even more delicate questions. As emphasized above, transfer programs have a variety of goals. Apart from income security, they are also intended to offset certain market imperfections. Diamond (1977) regards public pension plans as justified partly because of the inability of the private insurance market to protect income adequately against the uncertainties that cloud the future. Moreover, according to this analyst, workers in general underestimate the savings they need for retirement. If this argument is admitted, it could be dangerous to evaluate the Canada Pension Plan solely on the basis of its impact on income inequality. In fact, if the objective of income protection conflicts with the goal of income support, it becomes important to give each objective a specific weight. However, it appears difficult, if not impossible, to design an operational measurement of the incidence of programs on income protection.

The objective of income support is itself not clearly defined. Some analysts distinguish between absolute poverty and relative poverty (income inequality). Consequently a society without absolute poverty could exhibit serious income inequalities, while another might be characterized by high absolute poverty but lack major inequalities because everyone is equally poor. In reality, the concept of poverty necessarily implies value judgments. It can therefore vary over time, and may depend on the organization assessing its importance. In Canada, for example, institutions such as Statistics Canada and the Canadian Council on Social Development have adopted quite different methods for measuring low income lines, and the estimate of the incidence of poverty calculated by one is nearly half the estimate

of the other (Ross, 1983). Moreover, Statistics Canada has revised its lines three times since 1961. Public opinion in general appears to make a clear distinction between the objective of combatting poverty and that of reducing income inequality. According to some studies (for example, Platters, 1979, and Villeneuve and Nadeau, 1978), the latter objective does not express a significant popular will, whereas the objective of guaranteeing an annual income seems to be high in the order of priorities. This might partly explain the lack of interest taken by non-specialists in measures of inequality, such as the Gini coefficient.

The incidence of poverty (proportion of poor people) does not take into account how far personal income is below the poverty line. For example, the introduction of a transfer program guaranteeing an income below the line could have at best a negligible effect on the incidence of poverty, even if it improved the economic situation of low income earners. Sen (1976) has designed a measure that does make allowance for this phenomenon, but it has yet to be used extensively.²²

The use of monetary income as a concept of economic welfare does not take account of the possible influence of non-monetary aspects. For example, wage income inequalities that merely compensate differences in employment costs, employee fringe benefits, regional attributes, the cost of living, income variability, education and vocational training costs, or the risk of occupational accidents do not reflect "real" economic inequalities. At the same time, income inequalities reflect both a dispersion of income-generating capacity and a dispersion of the use of this capacity. The latter could depend, for example, on differing attitudes toward the choice between leisure (or domestic production) and income. Lindbeck (1983) shows that the data on Sweden create an exaggerated picture of economic inequalities when they are not weighted to allow for the importance of time spent at work. In fact, according to this analyst, choices between part-time and full-time work in Sweden are essentially the result of voluntary decisions by individuals.

Income data used in Canada and elsewhere to determine the poverty line and calculate measurements of inequality, such as the surveys of consumer finances, contain numerous omissions on such items as employee fringe benefits, capital gains, program contributions, and taxes other than income tax. Furthermore, several studies indicate that there may be systematic underestimations of income for low income earners (Greenberg and Halsey, 1984). The spread of illegal work has probably aggravated this problem, not only in the lower income bracket, but also for higher income levels owing to incentives generated by the tax rate structure. Lastly, the data do not take account of transfers in kind (low-cost rental housing, health, education, and so on). A recent study in the United States concludes that the number of poor people would be 42 percent lower than official figures if these transfers were taken into account (Smeeding, 1982). It also concludes that, in view of the increasing use of this kind of transfer,

the official figures underestimate the rate of progress toward poverty reduction. To a certain extent, though, these evaluations are arbitrary, since they rest on assumptions regarding the value individuals attach to those transfers.

Measures of poverty and income inequality are very sensitive to the reference period over which income is defined. It can be readily understood that inequality measured over one year could give an exaggerated picture of inequality compared with an evaluation over the life cycle. Thus, in a society in which all individuals are identical but for age differences, annual income inequalities will be observed, since the young and the elderly will earn lower incomes than working-age adults. Lillard (1979) concludes that, in the case of Americans from a particular group, life-cycle income inequality was about 45 percent lower than inequality of annual incomes. The question of mobility within the income scale adds to the difficulty. A distinction between permanent poverty and temporary poverty therefore appears fundamental. Poverty will generally appear as less serious when mobility between poverty and non-poverty is high. There is in fact a great degree of individual mobility within income scales in North America. A six-year study done in the United States (U.S., Department of Health, Education and Welfare, 1976) concludes that only 20 to 30 percent of individuals below the poverty line in any given year remained there for the full six years.

The measures used are sensitive to the classification of family units selected for evaluation purposes. Should the monetary income of a family be used regardless of the size of the family? Or, conversely, should the per capita income of the family unit be used? Or should different members of the unit be assigned specific weights? In view of the great diversity of lifestyles in Canada, the figures on income inequality will clearly differ for each hypothesis adopted.

Evaluation of the impact of transfer programs on poverty and income inequality is best done through comparison of after-transfer income with income in the absence of transfers. But the latter variable is not known. Studies in which it is replaced by pre-transfer income implicitly assume that individual behaviour is not changed by the existence of transfers. Yet this assumption is contrary to the studies surveyed in our analysis of the welfare costs of taxes and transfers. The methodological problem basically consists in evaluating the incidence of transfer programs and their financing. Two approaches are possible. The first draws certain hypotheses from the relevant literature on the incidence of each form of tax and transfer. This approach is the one chosen by Gillespie (1980) for Canada. The second, more recent technique relies on the computable general equilibrium model approach. These models must adopt assumptions relating especially to the preferences of households and to production technology. Obviously, conclusions as to the redistributive effects of taxes are highly sensitive to the approach and assumptions chosen (St-Hilaire and Whalley, 1982).

It is equally important to ask how transfers are financed. Assessment of the redistributive effects of transfers must be based on the benefit each group derives from the transfers net of the taxes used for their financing. Studies analyzing the redistributive effects of transfers without taking their financing into account implicitly assume transfers are free. Moreover, it becomes essential to determine the structure of the taxes (or contributions) from which they are financed, as well as their incidence.

This short methodological survey points out some of the difficult problems researchers face in analyzing the advantages of government transfers, as well as some of the limitations of the conclusions that may be drawn.

The Impact of Transfer Programs on Poverty and Inequality

Most observers agree that the advent of the welfare state has made it possible to provide improved economic protection to Canadian households and to reduce considerably the incidence and severity of poverty among the less fortunate in our society. According to unrevised Statistics Canada data, the proportion of families below the poverty line fell from 26 percent to nearly 9 percent between 1961 and 1980. During this period, the share of government transfers in the incomes of low income families nearly doubled, revealing an increasing dependence of poor families on government transfers.

However, it must be emphasized that the gains are not a consequence of transfer programs alone. Undoubtedly, a large fraction of these gains is due to the rapid economic growth Canada experienced between 1960 and the early 1970s. It is difficult to evaluate precisely the relative significance of these two factors. One approach would be to study changes in the structure of poverty prior to 1960 — that is, before the sharp increase in income security programs. Unfortunately, coherent series on the incidence of poverty in Canada before 1961 do not exist, but the U.S. experience yields interesting information. The proportion of the U.S. population below the poverty line fell from 30 percent in 1950 to 18 percent in 1964, even before the American government began massive assaults in the “war on poverty.” These numbers illustrate the importance of economic growth as a factor in the fight against poverty. Still, the long-term impact of income-tested transfer programs on work incentives and on the fragmentation of households may actually have helped breed poverty, thereby diluting the gains made on that front. Changes in lifestyles in the last 20 years have clearly been substantial, and have tended to foster a greater measured poverty (Lefebvre, 1982).

The next question to ask is whether transfer programs have succeeded in reducing inequalities in income distribution. In fact, distribution appears to have held steady, despite the growing volume of transfers (Gillespie, 1980). This phenomenon may be traced to a number of factors.

- Demographic changes, in terms of both the age structure and the composition of households, have contributed to increasing income inequality (Lefebvre, 1982). According to some observers, the effect of transfers and taxation has essentially been to combat the growing inequality of private incomes.
- The impact of transfer policies on inequalities is felt less acutely over the long term than in the short run owing to the programs' effects on behaviour.
- Any government intervention involving regulation, for example in the area of farm subsidies, post-secondary education, public sector wages or unionization, may have exacerbated income inequality.
- The effective progressivity of taxation may be very low and may therefore have little redistributive impact on incomes (Gillespie, 1980). As mentioned above, the argument is nevertheless controversial in view of the sensitivity of findings to assumptions regarding incidence.
- Government transfers may have discouraged the private sector from making intra-family and inter-family transfers. Lampman and Smeeding (1982) come to the conclusion that inter-family transfers in the United States are now half what they were 30 years ago. Furthermore, an empirical analysis by Roberts (1984) indicates that, of \$50 billion in charitable donations made in that country in 1981, only a very small fraction was earmarked for poor households. This trend seems to have begun during the 1930s when the federal government first began to intervene in the area of income security.

Therefore, a comparison of the aggregated data on incomes for different periods runs into serious problems of interpretation. Instead, studies aimed at evaluating the redistributive impact of certain programs usually compare incomes after and before transfers.

Cloutier (1978) uses this approach to study the five main federal transfer programs (old age security pension, guaranteed income supplement, family allowance, the Canada and Quebec pension plans and unemployment insurance) for the 1971–75 period. According to his conclusions, family allowances are distributed regressively, and this tendency has been accentuated with time. Almost one-third of total payments went to families in the wealthiest quintile in 1975. Furthermore, unemployment insurance benefits offer little assistance to those in the poorest quintile. In fact, persons in that quintile for the most part are not active in the labour market, or are not eligible for the unemployment insurance program because they are not employed on a regular basis. In short, unemployment and low income are not necessarily synonymous. However, these conclusions change when benefits net of the taxes used to finance programs are studied. Both programs then remain regressive for the poorest quintile, but become progressive for the others.

Programs aimed at the elderly are all progressive with regard to benefits paid, and become even more so when net benefits are measured. The pronounced progressivity of these programs results from the fact that only the elderly are eligible and that this group is concentrated in the lower quintiles. In addition, the guaranteed income supplement is subject to an implicit tax rate of 50 percent. This selective program actually distributes more money than the universal old age security program, even though it compares less favourably on the basis of net benefits than on the basis of gross benefits paid. However, Cloutier examines financing of these programs through direct taxation only. The picture of the redistribution process given by net benefits might be different if a portion of the financing came from indirect taxes (Mendelson, 1981).

Beyond this, the question of the time horizon is fundamental, especially in the case of public pension plans. Cloutier implicitly compares the incomes of those who contribute to the program with the incomes of program beneficiaries, ignoring future benefits of the first group and past contributions by the second (Mendelson, 1981). According to the life-cycle approach, the present value of benefits should be compared with contributions for each generation. This approach is the one used by Pesando and Rea (1977) and by Beach (1981). They conclude that the Canada Pension Plan is currently regressive for those who contribute to or receive benefits from it. Its regressivity is explained in part by the fact that present beneficiaries have not had to pay full contributions in order to be entitled to full benefits. The resulting subsidy increases with benefit level. This situation could change over the years as the system matures.

On the other hand, Friedman and Friedman (1979) conclude that mature social security plans are regressive. According to their analysis, low wage earners contribute to the plan for a longer period since they generally begin to work earlier than better paid workers, but they do not receive benefits for as long because their life expectancy is shorter than those in higher paid categories.

Conclusion

In every society, there is an inevitable trade-off between equity and efficiency. Achieving a more equal distribution of national income means accepting a concomitant general reduction in the standard of living. The decline in economic activity stems in large part from disincentive effects caused by the presence of marginal tax rates, including disincentives to work, to save, to take risks, and so on. Paradoxically, the highest marginal tax rates are often found among the most underprivileged in terms of the reduction in the amount of benefits these people are assessed when their incomes rise.

In Canada, the trade-off between equity and efficiency appears to be more rigorous than is generally believed, and seems to be becoming increas-

ingly constraining. Recent estimates of the welfare cost of redistributing one additional dollar generally fall between \$0.30 and \$0.60. This means that between 30 and 60 percent of the amount redistributed simply disappears as a consequence of the operation. The expanding role of the state and the resulting high level of tax rates go a long way toward explaining this situation. In addition, increased competition in international markets has raised the tax burden for each country. In a context where labour costs and return on investments are crucial factors in business expansion and job creation, heavier tax burdens can have serious consequences. It appears likely that, as long as growth remains uncertain, increasingly keener competition on world markets will force governments to place strict limits on increases in tax rates and, as a result, on the extension of transfer programs. This tendency has already begun to surface. In view of this, the following question naturally comes to mind. Is it possible, through appropriate reforms to the present income security system, to increase its redistributive efficiency or to reduce its economic costs? To accomplish this aim, several reform options are available.

Reduce the variability of marginal rates through closer integration of taxation and transfers In this connection, the negative income tax approach (Browning and Browning, 1983) has received strong support from analysts of the system, insofar as such a system replaces existing government assistance and demogrant programs. The redistributive efficiency of this kind of system is especially favoured because it makes it possible to determine the amount of transfers in terms of the needs of households. It seems to be easy to administer and understand. Moreover, negative income tax is a less constraining system than generally thought. The political authorities can actually set the desired basic benefit levels, tax rates, and the categorization of households with reference to the inevitable trade-off between these factors.

Reform the tax system by using taxes that are less costly in terms of incentives Several countries such as Sweden and England are seriously considering replacing the present system with a proportional tax on consumer spending. Recent empirical studies (for example, Ballard, Shoven and Whalley, 1982) indicate that a reform of this kind would be highly advantageous from the point of view of the welfare costs associated with funding government expenditures.

Strengthen the actuarial link between contributions to and benefits from social insurance programs Such programs as government pension plans and unemployment insurance, in their present form, actually entail hidden subsidies or taxes that can appreciably alter incentives to work or to save.

Privatize some government services Return these services to the private sector if that sector can provide the services efficiently and adopt administrative methods designed to make the public sector more efficient.

Notes

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1. The inclusion of medical services in the definition of income security may seem astonishing to some people. In fact, this is an in-kind transfer that protects the income and economic welfare of recipients. In the United States, it is customary to include it in the definition of income security. In any case, a precise evaluation of the contribution of in-kind transfers remains problematic insofar as the degree of substitution between them and monetary transfers is not perfect, and as relative prices of in-kind transfers change over time (Browning and Browning, 1983).
2. The data on income security was compiled from *Historical Statistics of Canada* (Statistics Canada, 1983), deducting series C-594, which deals with federal and provincial social service programs, from series C-599, which gives total social security spending, all levels of government, including health. However, there is no single definition of income security expenditures, so the figures given are somewhat arbitrary. The definition used in the present study follows, as far as possible the one usually used in American studies (for example, Danziger, Haveman and Plotnick, 1981). If health care is excluded, the share of income security in total expenditures increases from 5.5 percent in 1966 to 9 percent in 1975.
3. Most provinces have chosen not to include explicit indexing regulations in their legislation, preferring instead to determine the frequency and degree of indexing of benefit levels ad hoc. For example, a recent study (National Council of Welfare, 1981) shows that the real level of social assistance benefits declined in Ontario between 1975 and 1983.
4. A detailed description of the principal programs in the income security system is given in the *Canada Year Book* for 1980-81, and in the *Inventory of Income Security Programs in Canada* (Standing Committee of Officials Reporting to Deputy Ministers of Social Services, 1984), which also contains a comparative analysis of provincial social welfare programs. A detailed analysis of unemployment insurance programs and government pension and health insurance plans can be found in studies by Cousineau (1985), Éthier (1985a) and Grenier (1985), respectively.
5. The analysis is comparable with the ones done by Garfinkel (1979) for the United States and Lefebvre (1981) for Quebec.
6. These countries include Australia, Canada, Britain, West Germany, France, Israel, Sweden and the United States.
7. A certain amount of public sector redistribution could actually be advantageous for all groups in society insofar as the individuals who financed the program wanted redistribution either for reasons of charity or for insurance against the risk of a reduction in income; see, for example, Hochman and Rodgers (1970) for an analysis of charity.
8. This figure corresponds to the marginal tax rate that is faced by the individual whose only choice is between full-time work and non-work.
9. The ensuing discussion is based in part on Lindbeck (1980).
10. Let the negative tax system be defined by: $T = -r\bar{Y} + tY$, where T is income tax, Y is household income and \bar{Y} is average income for all households. Summing this expression over all households, dividing by total income and defining $g = \Sigma T / \Sigma Y$ yields Akerlof's relation.
11. Let a be the fraction of households identified as poor; Akerlof's relation then becomes $t = ar + g$. If r and g are given, a reduction in a makes it possible to reduce the tax rate t .
12. There are some exceptions to this rule. For example, when the labour supply of some groups produces externalities on the whole population, the income effect becomes relevant for calculations of the economic cost associated with transfers and taxes.
13. This analysis is based on Fortin and Newton (1982).

14. For a recent survey of the literature on the impact of unemployment insurance, see Cousineau (1985).
15. The ensuing analysis also applies to the Quebec Pension Plan, as the two plans are almost identical.
16. According to a paternalistic argument, young adults systematically underestimate retirement savings needs, and so require such a compulsory system. Unfortunately there are only a few empirical studies on the subject. But even if this argument is accepted, it would not justify instituting a public plan. It is possible to constrain the individual to save using private savings instruments.
17. For a survey of the literature on labour supply dealing with cross-sectional and experimental data, see Killingsworth (1983) and Mofitt and Kehrner (1981).
18. For a survey of these studies, see Bishop (1980).
19. For a not too technical analysis of these phenomena, see Bénéton (1983).
20. This definition is premised on the notion of equivalent variation. Other definitions are possible. See Diamond and McFadden (1974).
21. As a general rule, the marginal cost is approximately equal to twice the average cost; see Ballard, Shoven and Whalley (1982).
22. For a recent analysis of poverty indexes, see Donaldson and Weymark (1983).

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Unemployment Insurance and Labour Market Adjustments

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Introduction

Canada's unemployment insurance (UI) program is a vast undertaking. Expenditures reached close to \$12 billion in 1983 and are expected to total \$44 billion over the next four years (1984-87) — an average of \$11 billion per year (Canada, Department of Finance, 1983, p. 38). The program covers a wide range of objectives. It is both a source of income redistribution¹ and the largest built-in stabilizer of spending in the economy. Above all, it is a means of protecting workers' incomes against the risks of unemployment and this is the basic reason for its existence.

The UI program is public because, in the current state of our institutions, a private program would be suboptimal. Moral hazard, adverse selection, asymmetric information² and other factors (unequal distribution of unemployment, sensitivity to economic circumstances) would make the decentralized provision of unemployment insurance by private companies too costly in relation to the expected benefits. If, under a decentralized system, the benefits anticipated by individuals were lower than the premiums demanded by the insurance companies, people could be expected to insure themselves at a suboptimal level. Since society as a whole benefits from macroeconomic stabilization of incomes, public intervention is called for in the provision of an unemployment insurance program.³ However, that is not to say the present system is only beneficial.

Beginning in 1977, greater emphasis has been placed on the program's impact on the quality of labour market adjustments (Unemployment Insurance Commission, 1977). At any given moment in time, there are imbalances in labour markets. Some markets experience manpower shortages while others have an excess supply of labour. Wages and productivity are higher in some regions and lower in others. Thus workers would benefit if they moved from the more disadvantaged markets (regions, industries, or occupations) to those that offer better opportunities in employment,

earnings, and productivity. Ideally, a UI scheme that encouraged such adjustments and introduced more flexibility in labour markets — for example, by facilitating the process of job search by the unemployed — would generate an overall increase in employment, income, and output.

On the other hand, a UI scheme that acts as a deterrent to labour market adjustment will be unable to achieve its income redistribution and protection goals except by reducing the wealth of the population at large. Any type of work disincentive or other factor that slows down, prevents, or reverses the desirable adjustments will maintain or increase unemployment in non-viable activities while generating shortages and inflationary pressures in more viable activities. This will lead to an overall reduction in employment, income and output, as well as in Canada's competitiveness on world markets. Mechanisms will clearly be needed to facilitate labour market adjustments in the future.

The three major reports on Canadian labour markets prepared by federal agencies all stated that the situation at the end of the 1970s already showed signs of costly maladjustments (Economic Council of Canada, 1976; Canada, 1981c; Canada, 1981b). They also predicted significant changes in labour demand (as a result of the relocation of industries, changes in the industrial structure of output, and changes in occupational structure of the required manpower) and in labour supply (as a result of the decreasing influx of young people into the labour market, the increasing labour force participation by women, and the aging of the labour force). If the skill requirements of jobs of the future are not matched by the skills of persons already in the labour market and new entrants, the imbalances experienced in the recent past can be expected to intensify significantly.

Therefore, the study of the influence of the UI program on the dynamics of labour markets meets a pressing need when it is viewed within a wider context of overall labour market adjustment. This paper is aimed specifically at examining these relationships. It deals in particular with the program's impact on the incentive to work, on productive job search, on worker mobility, and on job stability. The methodology selected consists essentially in reviewing the economic literature on each of these various aspects.

The paper is divided into three sections. The first section identifies the main mechanisms by which unemployment insurance can influence the behaviour of labour market participants. The second presents empirical evidence documenting and quantifying the relative importance of these effects. The third provides an overview of current knowledge in this area and outlines a number of options for unemployment insurance policy.

The Potential Impact of the UI Program on Labour Markets

The object of this section is to describe the various mechanisms by which the program can influence the behaviour of workers and firms, and then

to highlight the influences that are most relevant for the analysis of labour market adjustments. It should be noted at the outset that the UI program influences behaviour in varying and sometimes conflicting ways, depending on the groups considered and the labour market status of individuals at any given time. It influences the incentive to work, job search, worker mobility and job stability. Each of these aspects is described in turn below.

Work Incentives

The impact of the UI program on the work incentive of claimants is examined here. Its impact on non-claimants is examined later in the discussion of job stability. In examining the impact of unemployment insurance on claimants, economic analysis is basically concerned with the income and substitution effects of granting or increasing UI benefit payments.

At present, a worker who is laid off after a minimum of 10 to 14 weeks of employment (variable according to the regional rate) is generally entitled after a 2-week waiting period to UI payments for the same number of weeks (10 to 14) plus 2 additional weeks when the regional unemployment rate (there are 46 regions for the purposes of the UI program) is at its lowest level (between 4 and 4.5 percent).⁴ For every additional half-point in the unemployment rate, the period of entitlement is lengthened by 2 weeks, up to an increase of 32 weeks (equivalent to an 11.5 percent unemployment rate). If the layoff follows a period of employment exceeding 25 weeks, every additional 2-week period of employment entitles the claimant to an additional week of UI benefits up to 13 weeks. The maximum duration of benefits is 50 weeks following the initial 2-week waiting period. The level of the benefits is set at 60 percent of the previous earnings up to a maximum which varies from year to year according to a formula for anticipating the average wage (eligible wage).

In summary, the present system provides the eligible worker with UI benefit payments equivalent to 60 percent of his insurable earnings for a minimum period equivalent to the number of weeks of employment plus two. To this minimum is added an extension period linked to the worker's prior experience and to the regional unemployment rate. In other words, the income of the insured laid-off worker is higher than if there were no unemployment insurance. Thus, economic theory foresees that at a higher level of income, if leisure is viewed as a normal commodity — i.e., one that is consumed more as income increases — the consumption of leisure and the length of the unemployment will increase with the level of UI benefit payments. This is known as the income effect.

If there is no unemployment insurance, the worker returning to the job will receive the full salary provided by that job. With a UI program, however, the net gain from returning to work will only be the difference between the post-unemployed wage and the UI benefit. For example, if the post-unemployment wage, at \$300 a week (or \$7.50 per hour for a

40-hour work week), is equal to the pre-unemployment level, without a UI program and leaving aside income tax, the net gain from returning to work will be \$300 per week. If there is a UI program, the benefit payment will be \$180 per week and the net gain will be only \$120. The net hourly gain will be \$3 — an amount that is significantly lower than the minimum wage rates at present in effect in Canada (around \$4 per hour). In this sense, the UI benefit is similar to a wage tax, and the tax rate is 60 percent, since the UI benefits are automatically withdrawn upon the worker's return to work. A marginal tax rate of 60 percent is, of course, in the upper bracket of the present income tax structure in Canada. Consequently, the value of work diminishes as UI benefit levels rise, and the latter provide an incentive to substitute leisure for work (the substitution effect); and the higher the earnings-replacement rate, the lower the incentive to work becomes.⁵

In short, because of its income and substitution effects, the UI program reduces the incentive for a speedy return to the labour market. As this slows down the desirable labour market adjustments, it is evident that there is a trade-off between the earnings-replacement ratio and the speed of these adjustments: the higher the ratio, the longer the adjustment period; the lower the ratio, the quicker the adjustments.

It should be pointed out, however, that an early return to work does not necessarily result in efficient labour market adjustment. In fact, if it leads workers to accept lower salaries or more unstable jobs than are warranted by their skills and qualifications, the result is a depreciation of their human capital and lower productivity levels — consequently a loss and a waste, both for the individual and for society as a whole.

However, the generosity of the UI program acts as an incentive for workers to refuse productive and stable jobs with an overall salary corresponding to their qualifications or exceeding their previous earnings, another potential source of waste is created. In that sense, UI benefit levels can improve or prevent labour market adjustments, depending on whether they are adequate, too low, or too high. In theory, then, one can conceive of an optimal UI benefit level that would facilitate improved labour market adjustment. To determine the optimal level of UI benefits, one must determine to which extent they encourage productive job searches.

If the UI program leads to a longer search, there is a cost associated with the loss of production during that period. Nevertheless, if that additional search period results in better wages and improved productivity, there will be economic benefits. It is the comparison of these benefits and costs that provides the basis for a judgment on what the optimal level of UI payments and other provisions of the program should be.⁶

Job Search

While the theory of income and substitution effects does not concern itself with the impact of UI payments on job search, this factor is explicitly

recognized in search theory. The major parameters of that process are as follows:

- Unemployed workers have some idea of the frequency distribution of jobs according to skill requirements and wage levels (i.e., there is a greater concentration of jobs requiring average qualifications and offering average wages, and there are fewer jobs at the opposite ends of the skill and wage scales).
- But the unemployed are not familiar with every single job available on the market.
- Consequently, they must conduct a random sample survey of the jobs available. Each approach takes time, and only one job can be investigated at any one time.
- Finally, the unemployed workers determine their “reservation wage” — the wage level below which they are not willing to accept a job, taking into account their alternative sources of income (savings, investment, spouse’s income, UI benefits, etc.), their level of irreducible expenses, their previous earnings, qualifications and skills.
- At the same time, they know they cannot be paid wages that are higher than the maximum available for their qualifications and skills.

In that way, the reservation wage limits the range of acceptable jobs, while the maximum wage limits the range of accessible jobs. Consequently, there will be a certain number of acceptable jobs between the minimum reservation wage and maximum accessible wage. To the extent that UI benefits raise the reservation wage, the range of jobs acceptable to the workers will be narrowed, and the probability of finding a job within any given time period devoted to search duration will be reduced accordingly. Consequently, the higher the UI benefit level, the longer the duration of unemployment.

In short, whether one uses labour-supply theory, based on income and substitution effects, as in the preceding section, or job-search theory, as was done in this section, one can only arrive at the same conclusion: UI payments tend to lengthen the duration of unemployment.⁷ Thus we have a firm conclusion in economic theory which must be explicitly tested as we review the literature of empirical tests and quantification.

The mechanisms by which UI payments affect the duration of unemployment in the two theories are not identical however; in terms of labour market adjustments in particular, their impacts are markedly different. In the first instance, UI benefits are an incentive to leisure and a disincentive to work. There are costs associated with the losses of output and of income incurred during the additional period of unemployment. In the second case, UI benefits cause the unemployed workers to be more demanding with respect to the jobs available and encourage them to choose those jobs that are more suited to their qualifications. Hence, gains are anticipated in earnings, productivity and job stability.⁸ Thus the costs

associated with the additional period of unemployment are more or less offset by these gains. Clearly, however, UI benefits are not designed specifically to subsidize job search but to subsidize the unemployed themselves — who can, to a large extent, use the payments as they see fit.⁹ That is why it is impossible to know a priori whether a given UI benefit level facilitates or hinders labour market adjustments. Empirical studies must therefore make a distinction between the effects of UI benefits on leisure and job search. To the extent that this distinction is affected by the monitoring provisions (work test) of the UI program, it will be useful to take these provisions explicitly into account when analyzing the program's impact.

To summarize the first two sections, UI payments are expected to increase the duration of unemployment, and claimants will use that additional period to acquire more leisure or to look for another job or both. If they use it for an intensified job search, the resultant earnings, productivity and job stability will be factors in calculating the benefits associated with the additional duration of unemployment, and the ultimate results will be positive, negative, or null. The empirical studies we propose to examine must therefore discuss the impact of UI benefits and the work test on the duration of unemployment, the intensity of job search and post-unemployment earnings, productivity and job stability.

Worker Mobility

In the preceding sections, the impact of UI payments on job search and on returning to work was discussed in general terms. Occupational or regional mobility of the labour force was not examined, at least not explicitly. In this section, changes in jobs involving that type of adjustment are considered more specifically. The decision to move to another region or to another job can be viewed as an investment decision — as a decision that involves economic benefits as well as costs. If the gains exceed the costs, workers will have an incentive to move; if the costs are higher, there will be no such incentive. From a dynamic point of view, the width of the gap between benefits and costs can be expected to accelerate the speed of the adjustments. In the case of regional mobility, the costs are monetary (transportation, removal, etc.) and psychological. In the case of occupational mobility, the costs are mainly associated with the earnings foregone during the training period. In both cases, the gains from moving can be estimated as the discounted value of the income differential associated with the move.¹⁰ Other things being equal, the wider this differential, the greater the incentive to move.

At the same time, the liquidity situation of the unemployed is another factor liable to affect their geographic mobility. Unemployment insurance plays a role at both levels. It acts to reduce the liquidity constraints while affecting the net gains expected from moving. The first of these effects

is obvious enough. UI payments provide an income to the unemployed, which makes it easier for them to move to another location or to another job.¹¹ At the same time, however, the effect of UI payments on the benefits of mobility will affect the incentive to move in various ways.

First, inasmuch as any assessment of the income differentials must take the unemployment incomes into account, particularly in the high unemployment regions, the UI program has a tendency to reduce the advantage of moving. The present provisions of the Canadian UI program tend to reinforce this effect by offering extended benefit periods according to the regional unemployment rate (two additional weeks of UI benefits for every 0.5 percentage point increase in the regional unemployment rate). These particular provisions thus increase the “attraction” of high unemployment regions. One might ask if the introduction of these provisions into the system in 1971 prompted an increased move of UI claimants toward high unemployment regions. In this sense, unemployment insurance can have a double effect on regional migrations: either by attracting new resources (immigration) to high unemployment regions or by reducing emigration toward the low unemployment regions.¹²

Ultimately, if the private or individual well-being associated with the decision not to move exceeds the private monetary gains that would result from moving because these gains are artificially reduced by the UI program, the latter could cause a reversal of the trends considered socially desirable. In other words, there is a divergence between private and social cost-effectiveness. Whereas it would be profitable from a social standpoint that the workers move to the regions offering employment opportunities, there is no encouragement to mobility from a private standpoint. In such a context, the UI program may contribute to reducing the emigration of the unemployed from the regions and professions with a lower wage and greater vulnerability to chronic unemployment to regions where they would be socially more productive.¹³ Consequently a climate of strong dependency on UI in economically less favoured regions and professions would be created.

Finally, because the effect of the UI program on the budgetary constraints of the beneficiaries can stimulate mobility in general, it can constitute a type of subsidy of inefficiency, as described in the preceding paragraphs. The analysis of the empirical studies should provide more information on the tendencies of the migratory movement associated with the different provisions of the UI program.

Job Stability

The impact of the UI program on job stability can be analyzed from two different points of view — that of the supply side (the workers) and that of the demand side (the firms). From the point of view of labour supply, the UI program, which may act as a disincentive for the beneficiaries to

work, at the same time has potential to encourage people who would otherwise remain outside the labour force to join it. The objective would be to work long enough to become eligible for UI benefits. Under these circumstances, and taking into account the minimum requirements of the monitoring provisions of the program, the economic justification for such behaviour is perfectly rational.

For example, under the program's current provisions, 20 weeks of employment, in addition to providing 20 weeks earnings, entitle workers to 22 to 50 weeks of benefits equivalent to 72 percent of their earnings (cf. note 5). In the first case (22 weeks of benefits), the rate of employment subsidy is equivalent to 80 percent of the former wage whereas in the second case (50 weeks of benefits), the rate is 180 percent.¹⁴ Such provisions are therefore likely to have an effect on the participation rate in the labour force.

At first glance, such provisions, because they direct workers toward temporary jobs, might be perceived as facilitating labour market adjustments.¹⁵ However, while the duration of job search may be artificially reduced as a result, one could not view this phenomenon as consistent with greater incentive to seek the most productive, best paid and most stable jobs offering the best chance of advancement. If, to obtain a production of 20 work weeks, one has to pay 30 weeks of benefits, the cost-benefit ratio appears clearly deficient from a social standpoint. At the same time, the influx of workers willing to accept lower wages might encourage firms to change their production patterns in order to absorb this type of manpower more cheaply. Industries might be led to give greater emphasis to the creation of unstable, low-paying and low-productivity jobs.

Thus, if the premiums are not linked to the risks, i.e., if the program does not set premiums that vary according to the rate of layoffs, the traditionally most unstable industries (seasonal, cyclical, etc.) will benefit from a net transfer of resources by receiving a share of total UI payments that is much larger than their respective contributions (see Table 5-B1, in Appendix B).¹⁶ Since the cost of a layoff is much lower for the firm than for society, we have here a type of subsidy for layoffs in these industries.

That aspect of the problem has been the focus of recent empirical studies dealing with the impact of the UI system on labour markets. To the extent that these studies confirm theoretical expectations, the absence of premiums linked to risks could contribute in a major way to job instability, raise obstacles to the development of better jobs (as energies are channelled elsewhere), and make a larger proportion of workers dependent on so-called "secondary" jobs.

Summary

Our study of the potential impact of unemployment insurance sought to identify the mechanisms by which UI payments affect the behaviour of

workers and firms, the implications of these for labour market adjustments, and the key variables on which our analysis of the empirical literature must hinge. These issues were examined from three points of view: the impact of the UI program on work incentives and job search, worker mobility, and job stability.

With respect to the incentive to work and job search, the UI program affects behaviour in the following way. By reducing the gains from returning to work and by providing income to claimants without any work being provided in exchange (the income and substitution effects), UI benefits can have a substantial work disincentive effect on the UI beneficiaries.¹⁷ Through their impact on the reservation wage, however, UI benefits enable recipients to spend more time looking for a job. The effects can work in two directions: first, by prolonging the duration of unemployment, UI payments can generate a cost owing to the loss of output during the additional unemployment period; second, if that extended job search period is productive, the UI benefits can generate gains associated with a better job. In either case, the adjustment process is slowed, but the adjustments themselves may be improved. That is why a cost-benefit analysis is necessary. The empirical studies on the duration of unemployment, job search, and post-unemployment earnings and job stability should provide information on economic benefits and costs of these impacts.

As far as the occupational and regional mobility of workers is concerned, two factors are involved: the worker's liquidity situation, and the inter-regional and inter-occupational income differentials. By easing the unemployed worker's liquidity problems, UI payments facilitate mobility. By reducing the income differentials, however, they could also reduce migratory flow from high-unemployment regions or occupations toward those where unemployment rates are lower. In this sense, the effect of the UI program will be to motivate the workers to migrate to high unemployment regions or to stay there. In the case of occupational mobility, this could be reflected in a reduced interest in career advancement on the part of UI claimants. Overall, these trends would have negative implications for labour market adjustments. The empirical studies dealing with the influence of the UI program on occupational mobility and interregional migratory flows should be able to quantify these relationships.

Finally, because the present provisions of the UI program provide a particular incentive to enter the work force, because they bring an influx of cheap labour to the firms, but also because, in the absence of premiums linked to risks, the program subsidizes layoffs in unstable and seasonal industries, many conditions are present to favour the development of unstable and low-paying jobs. The empirical work on the effect of UI on the rates of participation in the labour force, on the one hand, and on the short-term unemployment and employment, on the other hand, can provide information on each of these potential effects.

Empirical Results

In the light of the arguments developed in the section on the potential impact of the UI program on labour markets, it should be clear that, in order to be relevant to labour market adjustments, empirical research must deal specifically with the impact of unemployment insurance on the duration of unemployment, job search, post-unemployment earnings and job stability, occupational mobility, interregional migratory flows, the rate of participation in the labour force, and short-term employment and unemployment. Only one of these areas — the impact on occupational mobility — has not been covered to any significant degree in the empirical literature. Given the importance of this issue for labour market adjustments, it would seem desirable that studies in this area be undertaken as soon as possible.

Duration of Unemployment

With respect to the impact of UI benefits payments on the duration of unemployment, Table 5-1 shows that empirical investigation of this area has been fairly extensive in both Canada and the United States. The results of U.S. studies are considered here for two main reasons. First, the fact that UI programs differ from one state to another in that country provides a clear methodological advantage when one seeks to know the impact of alternative UI schemes (earnings replacement ratios, work tests, etc.) on the duration of unemployment. Second, the U.S. studies, especially those conducted since 1976, deal with microeconomic data on UI claimants — information that is of prime importance when attempting to determine the impact of the system on work incentive. On the other hand, the Canadian studies are equally helpful in that they record the impact of the profound changes made in Canada's UI program in the early 1970s. Until then, the benefit rate varied between 43 and 53 percent (depending on whether or not the claimant had dependants); it was raised in July 1971 to 66.6 percent (75 percent during the extension periods granted to claimants with dependants). Whereas the legislation formerly required a minimum of 30 weeks of employment during the two preceding years, it now lowered this requirement to 8 weeks for the preceding year. The stipulation that every 2-week period of employment qualified the claimant to one week of UI payments was changed to a maximum entitlement of 44 weeks of payments for a minimum employment period of 8 weeks. The program's coverage was expanded significantly, and extension periods were established on a regional basis. In other words, the UI program covered far more people than before by broadening eligibility criteria, and at the same time it was more "generous." The effects of these changes on expenditures and financing requirements were soon felt. In 1970, expenditures stood at approximately \$700 million, but in 1972 they approached \$2 billion.

TABLE 5-1 Estimated Impact of Increased UI Benefits on Duration of Unemployment, Canada and the United States

Studies	Additional Weeks of Unemployment
Canada ^a	
Green and Cousineau (1976)	+ 1.4
S.A. Rea (1977)	+ 1.5
D. Maki (1977)	+ 2.0
F. Lazar (1978)	+ 2.0
United States ^b	
Chapin (1971)	+ 0.4
Marston (1975) ^c	+ 1.0
Ehrenberg and Oaxaca (1976)	+ 1.5
Classen (1977)	+ 1.1
Holen (1977)	+ 1.0
Burgess and Kingston (1976)	+ 1.0

- a. Increase from 43 percent (before 1971) to 67 percent (1972) in earnings replacement.
b. Simulated impact of an increase from 50 percent to 60 percent in earnings replacement.
c. For the overall impact, Rea obtained an estimate of four weeks.

Table 5-1 shows in condensed form the impact of reform of the UI program on the duration of unemployment.

The studies of Maki (1977) and Lazar (1978) estimate the revision of the Canadian UI program prolonged the duration of unemployment by two weeks. Green and Cousineau (1976) and Rea (1977), obtained slightly lower estimates of 1.4 and 1.5 weeks, respectively. The methodology used by these two last researchers is similar. It consists of obtaining estimates of the income and substitution effects generated by the reform of the UI program. If we have a general knowledge of the relationship between the periods of employment and the variations in income and in wages, which becomes possible when we have a sample of the population that works different hours or weeks during the year and that earns different incomes and wages, it is then only a question of simulating the effect of unemployment insurance on these two variables to estimate the effects of the UI program on the periods of employment and unemployment of each year.

In the case of Maki (1977) and Lazar (1978), the methodology aims to estimate more directly the effect of the reform of the program on the length of the unemployment. For example, after having retained as elements of control, different factors affecting the length of unemployment over time, the change occurring in this variable from the moment the law was amended is estimated. This estimate, however, has the disadvantage of including the other modifications that the economy may have undergone and that may not have been accounted for by the factors explicitly considered in the analysis.¹⁸ Note also that the variable studied is not the length of the unemployment period of UI beneficiaries but of all the unemployed.

Turning to the U.S. studies, Marston (1975) compared UI claimants with those unemployed persons who do not receive any UI benefits. This approach has *prima facie* appeal, but it suffers from considering populations with characteristics that are not easily comparable.¹⁹ Three independent studies using microeconomic data on the duration of unemployment for UI claimants (Classen, 1977; Holen 1977; and Burgess and Kingston, 1976) estimated that unemployment lasts one additional week per 10 percentage points increase in the earnings-replacement ratio embodied in UI benefits. The methodology used in these studies consists of identifying the difference in the length of unemployment between various U.S. states that exhibit different characteristics in their UI programs, after having accounted for the difference in the characteristics of the population and the economic situation. Ehrenberg and Oaxaca (1976) appeared to obtain a slightly higher estimate (1.5 weeks), but this applied to one specific group — that of men over 45. For the other groups considered, the estimated impact was lower (p. 765). Given the diversity of the data and methods used, the results are solid: in the United States, a difference of 10 percentage points in the earnings-replacement ratio between two states can result in an unemployment period that is longer by one week; in Canada, an increase over time that is almost double that percentage figure leads to an increase of nearly two weeks in the duration of unemployment. U.S. and Canadian results therefore appear to be consistent. For Benham (1983) and for Topel and Welch (1980), the empirical results are so conclusive that they consider the issue to be resolved. From this we draw our own conclusion — that when the earnings-replacement ratio is about 50 percent, every 10-point variation leads to a change of one week in the duration of unemployment for UI claimants.

Job Search

Under this title are reviewed the studies dealing with the intensity of job search and with post-unemployment wages and job stability. To assess how the quality of the search process may be affected by unemployment insurance, one must determine whether that process is longer or more intense as a result of the access to UI payments and whether it produces positive results in terms of earnings and job stability upon the worker's return to work.

In the preceding section, we saw that the Canadian UI program may have cost the Canadian economy a certain number of additional weeks of unemployment (3.5 weeks according to our estimates),²⁰ and therefore the same number of weeks of lost production and income.²¹ If this cost constitutes an investment in job search, it is important to evaluate its return.

The first step in this evaluation consists of estimating the impact of UI benefits on the intensity of job search. A recently published study for the

United States is available on this question. Barron and Gilley (1979), using a sample of 1,166 UI claimants in that country, estimated that, if the eligibility period is prolonged by one month or if the rate of payments is increased by 8 percentage points, this results in a *reduction* of 6.5 percent in the average number of hours devoted each week to job search.²² Consequently, if the total duration of unemployment increases as the result of an increase in UI payments, the intensity of the search per week (the basic unit) is diminished. In other words, the total duration is affected by two factors that have a tendency to offset each other: the number of search weeks increases, but the number of search hours per week diminishes.²³

TABLE 5-2 Estimated Impact of Increased UI Benefits on Job Search Intensity and on Post-Unemployment Earnings and Job Stability, United States

Studies	Estimated Impact
Job Search Intensity	
Barron and Gilley (1979)	– 6.5% (– 1 week)
Post-unemployment Earnings	
Ehrenberg and Oaxaca (1976)	+ 1.5% (women aged 30 to 44) + 7.0% (men aged 46 and over)
Burgess and Kingston (1977)	+ 7.9%
Holen (1977)	+ 12.3%
Classen (1977)	0.0%
Post-unemployment Job Stability (for former UI recipients)	
Classen (1977)	0.0%

As shown in Table 5-2, the empirical results for post-unemployment earnings are diverse. They vary between 0 percent (Classen, 1977) and 12.3 percent (Burgess and Kingston, 1976). Given the significant methodological difficulties associated with this type of problem (Welch, 1977), it is difficult to draw firm conclusions. Although Welch is confident about the duration results, he is skeptical about the findings on post-employment earnings:

In sum, I think the papers presented here carry important information on duration effects. Surely, these estimates can be proved by additional study, but I doubt that new evidence will dramatically affect our views of the value of what we have learned. On the other hand, we have only tentative evidence of post-wage effects and much remains to be done on this issue. (p. 461)

In fact, following a rigorous analysis of the four studies, Welch concluded that, in his opinion, neither of them has conducted a true experiment allowing for a valuable estimation of the effect on earnings.²⁴

Only one study is available on the effect of UI benefits on post-unemployment job stability. The method it uses is rudimentary. It con-

sists of testing for the impact of UI benefits on the number of different jobs held by workers during the two-year period following the return to work.²⁵ The test rejects any link between the UI benefits level and the subsequent job stability of the claimants. It has therefore not appeared possible to confirm the hypothesis of a link between the level of benefits and the stability of future employment for the *claimants*.

In short, the empirical studies do not succeed in identifying the benefits of the UI program as clearly as its costs. Barron and Gilley (1979) show that search intensity per unemployment period (one week) is reduced and thus practically offsets the longer total duration of unemployment. Research on post-unemployment earnings, however, leads to very uncertain results. Finally, the only study available on job stability does not support the assumption that UI claimants experience more stable employment after returning to work.

Before concluding this section, it is appropriate to comment briefly on the impact of the program's work test on work incentives and on job search. The results obtained by Holen (1977) and Horowitz (1977) in this area are particularly illuminating. After testing for a number of variables (unemployment, region, level of schooling, age, race, sex, and so on, 14 variables in all) and on the basis of a sample of 19,000 observations, Holen (1977) found that the work test had a substantial and significant impact on the duration of unemployment and on post-unemployment earnings. This study suggests that an improved work test can lead to a significant reduction in duration and to higher post-unemployment earnings levels. The effect of the work test is therefore to direct UI funds to those beneficiaries who are the most integrated into the labour market and to reinforce the intensity of the productive job search, resulting in the anticipated positive effects on earning.²⁶ In the same vein, Horowitz (1977) found that if the rejection rate rose from 5 percent to 10 percent, this would contribute to a reduction of 0.44 percentage points in the unemployment rate for white males in the United States. He concluded that a large part of the wage disincentive effect could be offset through a more adequate application of the program's work test provisions. The one criticism that comes to mind, however, is that, as Ashenfelter (1977) pointed out in commenting on Horowitz' paper, the rejection rate cannot be increased indefinitely without leading to a rejection of unemployed workers who are legitimately entitled to UI benefits.

Holen (1977) added one last piece of information to this picture: the effect of placement assistance to UI claimants. It emerged that such services contributed to a reduction of one week in the duration of unemployment but that they did not significantly affect post-unemployment earnings. Thus it seems that the monitoring and placement provisions of the program have a role to play with respect to the duration of unemployment and that the work test, in particular, favours a more intensive and more successful search.

Interregional Migratory Flows

Paralleling the 1971 reform of the UI program, a major historical change in interprovincial migratory flows in Canada took place. As Table 5-3 shows, while the net flows for the four Atlantic provinces were consistently negative before 1971, they suddenly became positive in the 1971–75 period.

**TABLE 5-3 Net Interprovincial Migration, Atlantic Provinces
Five-Year Totals, 1951–75**

Provinces	1951–55	1956–60	1961–65	1966–70	1971–75
Newfoundland	-3.9	-6.7	-12.6	-19.8	+ 4.1
Prince Edward Island	-6.3	-2.4	-2.1	-3.1	+ 2.7
Nova Scotia	-11.6	-15.2	-21.5	-16.5	+ 10.6
New Brunswick	-20.5	-8.2	-20.7	-21.5	+ 17.2

Source: Stanley L. Winer and Denis Gauthier, *Internal Migration and Fiscal Structure* (Ottawa: Minister of Supply and Services Canada, 1982).

Some authors, including Cousineau (1979), have attempted to determine whether at least part of this change in migratory patterns could be explained by the revisions of the UI program. Although restricted in the scope of its analysis to the flows between New Brunswick and Nova Scotia on the one hand, and Ontario on the other, Cousineau’s study did confirm that there was a significant reduction in emigration from the two Atlantic provinces, where earnings are low and unemployment rates are high, toward Ontario, where incomes and job prospects are better. The estimated reduction in emigration attributed to the reform of the UI program was 3,000 people per year. The assumption about return migration was rejected, however. It would seem, then, according to this study, that the reform of the program may have contributed to reduced emigration from the Atlantic provinces without, however, causing a movement of return migration.

In a more general study covering the impact of all regional transfer payments on the interprovincial allocation of human resources in Canada, Winer and Gauthier (1982) focussed in particular on the UI program. This broad and careful study, based on a very large and detailed microeconomic sample, also confirms, according to the authors, that the reduction in emigration from the Atlantic provinces toward the rest of the country corresponds to a change in the major elements of the UI program.²⁷ For the Atlantic provinces as a whole, the effect is estimated to be a reduction of 8,000 emigrants per year, other things being equal.

To sum up, the more recent studies conducted in Canada show that the assumption about the negative impact of the UI program on emigration from the Atlantic provinces is confirmed. Neither Winer and Gauthier (1982) nor Cousineau (1979) found a return-migration effect, although Winer and Gauthier found some evidence of increased interprovincial migration between the Western provinces and increased intraprovincial migration within the Atlantic provinces.

In conclusion, it would appear that, on the whole, the UI program does slow down labour market adjustments, in particular for low income people in the Atlantic provinces (Winer and Gauthier, 1982, p. 84). Inasmuch as this has a negative effect on the incentive to move and because the mechanisms of occupational mobility for low income people are similar to those of regional mobility, this negative effect on geographic mobility can be expected to apply to occupational mobility as well. More detailed research will be required, however, to confirm or reject this assumption.

Unemployment and Short-term Employment

The last element of this analysis of unemployment insurance and labour market adjustments concerns the question of unemployment and short-term employment. While job stability was expected to increase for UI claimants — an expectation that is not clearly supported by the evidence — one would expect that individuals initially out of the labour force would opt for short-term jobs, and that firms would develop an organizational structure based on more frequent temporary layoffs and more short-term jobs.²⁸ These assumptions have not really been tested for Canada. In the United States, where there are various experience-rating programs, a number of empirical studies have been conducted. Feldstein (1978) estimated that the absence of adequate experience-rating schemes can be sufficient to explain as much as half of the temporary layoffs in the United States. For Topel (1983), that proportion would be closer to one-fourth. Finally, for Holen (1977), Brechling (1977), Saffer (1983), and Benham (1983), the assumptions to the effect that premiums inadequately linked to risks explain a significant portion of short-term employment and unemployment are largely confirmed by the statistical evidence. One is led to conclude that there is a large consensus with respect to the effect of UI schemes currently in place in the United States on job instability. Other things being equal, we can expect such an effect in Canada because, for all practical purposes, there are no risk-related premiums in the Canadian UI program.

Glenday and Alam (1982b) study the impact of the different provisions of UI by region in Canada. Even though the authors limit their study to Newfoundland and Alberta, we can interpret their results in the following way. In the hypothesis of the extension of the “generosity” of the program in the high unemployment regions to the whole of Canada, it seems that the amount of unemployment and short-term employment would increase significantly in the country as a whole. On this question, the authors conclude that the main differences in the regional unemployment pictures are related more to the many short periods of unemployment in the high unemployment regions than to one or a few long periods of unemployment. Such conclusions therefore tend to confirm the hypothesis that the UI program reinforces the concentration of unstable and short-

term jobs in the regions with high unemployment and a high concentration of seasonal industries.²⁹

The estimated effects of the 1971 UI program reform vary enormously in studies on the rate of participation in the labour force. At the aggregate level, Green and Cousineau (1976) estimate an impact varying from 0.08 to 0.8 percentage points, Jump and Rea (1975) estimate it at 0.25 point and Siedule et al. at 0.176 percentage point. As for the less aggregated studies, Sharir and Kuch (1977) find an impact slightly higher than these estimates while Vanderkamp and Wilson (1983) find only a weak effect for the subgroup of women aged 22 and over and no significant statistical effect for young people and for men aged 22 and over. Finally, Walsh (1982) finds a significant *negative* effect of unemployment insurance for married women under 24, and 55 and over. For women of other ages and marital status in his sample, the effects are sometimes positive and sometimes negative, but never statistically significant. In conclusion, the empirical studies reveal little of the effect of UI on the rate of participation in the labour force. This can be attributed partly to the insufficient disaggregation at the regional level or the absence of certain specific considerations of other factors than the earnings-replacement ratio (Fortin, 1984), particularly in most of the studies (except Vanderkamp and Wilson, 1983) of considerations on the various other parameters of the program including the relation between the maximum period of benefits and the minimum period of employment.

Conclusion

Unemployment insurance was created to guarantee income protection for those who, for one reason or another (overall economic situation, technological change, etc.) are victims of unemployment. In the present circumstances, where the unusual extent of unemployment is clearly caused by a distinctly insufficient global demand, UI is of great help to many Canadians. At the macroeconomic level, UI stabilizes consumption in the economy by automatically providing income to the unemployed during a recession. It has thus been able to prevent unemployment from reaching an even more dramatic level in recent years. In addition, it redistributes income to lower income families through the partial financing based on the general income tax (see Appendix A).

Certain provisions, however, affect the behaviour of workers and firms as well as the adjustment mechanism of the labour market. The Commission has asked us to assess the state of theoretical and empirical knowledge on the impact of the UI program on the labour markets. The question is not a trivial one in light of the many adjustments foreseen in the next few years and of the efforts that will be needed to facilitate these adjustments.

From this point of view then, our review of the economic literature has

shown the following results. In the present state of knowledge, there are strong presumptions to the effect that:

- the UI program contributes to an increase in the length of unemployment;
- it contributes to an increase in the length of temporary layoffs; and
- it reinforces the concentration of temporary and unstable jobs in high unemployment and low wage regions.

From this angle, the UI program in its present form is an institution that does not fully satisfy the objectives of greater adjustments on the labour markets and development of stable and productive jobs. It should therefore be revised to make it more efficient in the coming years.

From the strict point of view of labour market adjustments, we would consider various more or less radical solutions such as:

- a reduction of the benefit rate to 50 percent;³⁰
- an elimination of the extended benefit periods based on regional unemployment rates;
- a tightening of the link between the maximum benefit period and the minimum employment period (provision of phase 1 of the program and establishment of a ratio of 3 or 2 weeks of work for 1 week of benefits);
- a reform of the program's financing to focus more on the risk-related premiums.³¹

These measures could result in substantial economies that would and should be reoriented to more productive purposes in terms of creation of durable and well-paid employment, better adjustments on the labour markets, and more adequate protection of workers experiencing difficulty in the labour market. In this sense, these recommendations should not be interpreted in terms of program cuts but in terms of a redistribution of the money available for social and economic purposes, the effectiveness of which would notably depend on implementing a job creation policy.³²

We must admit, however, that much of the information needed to permit informed choices is lacking. It would seem more reasonable to take the following steps: (a) study the optimal level of benefits, of the other provisions, and of the financing of the program from the point of view of labour market adjustments; (b) compare these results to the other objectives of the program (stabilization of consumption, protection and redistribution of income on the individual and regional level); and (c) implement the proper measures required by the different objectives of the UI program, given the weight that the political process attributes to each of these objectives. Such a process would permit the identification of the reforms that would allow us to solve certain apparent dilemmas, insofar as priority is given to this question in the future.

Appendix A
Redistribution Effects of Unemployment Insurance

Table 5-A1, taken from Cloutier (1978), shows the distribution of UI benefits in increasing order of after-tax income by family (quintile) for 1971 and 1975. For 1974, the first quintile (20 percent of the poorest families) receives 9.8 percent of benefits while the fifth quintile receives 15.9 percent of benefits. In this sense, the poorest classes receive fewer benefits than the richer ones. In fact, for the first three income classes, we can see that the higher the family income, the higher the percentage of benefits collected.

For 1975 — i.e., once the reform of the program is completed — this regressive aspect of the program increases. The higher quintiles receive more than their share of income. The lowest quintile gets 8.1 percent of benefits while the upper quintile gets more than 20 percent of benefits, including the top quintile (22.3 percent of benefits).

This increase of the regressivity of the program could be due to two main factors: the extension of eligibility to persons having a higher income and workers having shorter employment periods; and the greater participation in the labour force and in the UI program by members of middle and higher income family units directly encouraged by the program to enter the labour market.

TABLE 5-A1 Distribution of Gross UI Benefits by Family Income Level, Canada, 1971-75

Quintile	1971	1975
1	9.8	8.1
2	24.5	22.0
3	27.8	25.0
4	22.0	22.6
5	15.9	22.3
Total	100.0	100.0

Source: J.E. Cloutier, “The Distribution of Benefits and Costs of Social Security in Canada, 1971-75,” Discussion Paper 108 (Ottawa: Economic Council of Canada, 1978), p. 41.

If, however, we consider the amount of taxes collected to finance the program, it appears clearly progressive. As shown in Table 5-A2, the lower incomes contributed much less to the costs than did the upper incomes. Whatever the year, the higher the income bracket, the higher the contribution to the financing. The net result, once the costs of gross benefits are deducted, would prove the program to be progressive. The main cause for this trend is the progressive nature of the income tax which finances the program deficit. Cloutier (1978) gives the following example. For families with an after-tax income of \$25,000, the contribution to federal income tax represented 26.5 percent of the income tax, even though they

represented only 5.3 percent of the total of families in Canada. Therefore, to the extent that the UI program is partly financed by income tax, the allocation of income tax to the financing of UI clearly shows a progressive element.

**TABLE 5-A2 Distribution of Taxes Used to Finance UI
by Family Income Level, Canada, 1971-75**

Quintile	1971	1975
1	1.6	2.1
2	11.3	11.4
3	20.3	20.8
4	26.9	27.0
5	39.9	38.7
Total	100.0	100.0

Source: J.E. Cloutier, "The Distribution of Benefits and Costs of Social Security in Canada, 1971-75," Discussion Paper 108 (Ottawa: Economic Council of Canada, 1978), p. 41.

Appendix B

**TABLE 5-B1 Benefit/Contribution (Benefit/Cost) Ratios of
Unemployment Insurance, by Industry, Canada, 1977**

Industry	Ratio >1	Ratio <1
Agriculture	1.50	
Forestry	5.09	
Fishing and Hunting	2.10	
Construction	2.46	
Non-durable Goods (food and beverages, etc.)	1.24	
Recreation (sports, tourism, etc.)	1.67	
Personal Services	1.40	
Teaching		0.38
Public Services		0.15
Communications		0.36
Mining		0.67
Finance, Insurance, and Real Estate		0.75
Retail Trade		0.84
Commercial Services		0.91
Transportation		0.58
Durable Goods		0.87
Total	1.00	

Source: Canada, Department of Employment and Immigration, Task Force on Unemployment Insurance, Technical Study No. 12 (Ottawa, August 1981), p. 9.

Notes

This study is a translation of the original French-language text, which was completed in June 1984.

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1. For more details on the redistributive effects of unemployment insurance, see the studies of Cloutier (1978). They basically show that from the benefit standpoint, unemployment insurance is regressive (gives less to the poor). However, when the taxes collected in order to finance it are taken into account, the unemployment insurance program becomes progressive (gives less to the wealthy). Appendix A reproduces the main tables and provides the principal explanations of these findings.
2. In the language of insurance, the term "adverse selection" refers to the fact that persons at greater risk are always the first who seek to insure themselves.
3. For a discussion of institutional arrangements of a nature to privatize certain public institutions, see Marcel Boyer, "Information Risk and Public Policy," unpublished background paper submitted to the Royal Commission on the Economic Union and Development Prospects for Canada (Ottawa, 1985).
4. Beginning in July 1979, in order to be eligible, new entrants and re-entrants who had not worked 14 weeks during the preceding entitlement period had to accumulate 20 weeks of insurable employment; those who had already received benefits during the year could also be asked to accumulate up to six additional weeks of insurable employment in order to qualify. For these categories of persons, the number of insurable weeks was thus appreciably increased. For further details on this matter, see Beach and Kaliski (1983).
5. In technical terms, the earnings replacement rate is more complex and must take account of *differences* in taxation rates (income taxes and social security contributions, etc.), just as it must take account of work-related costs. A benefit/earnings ratio of 60 percent may thus result in an earnings replacement rate of some 72 percent (see, P. Fortin, 1984; Grubel, Maki and Sax, 1975a and 1975b; Green and Cousineau, 1976; and Feldstein, 1973).
6. In the case of these other provisions, Fortin (1984) notes that the existence of a waiting period encourages use of the maximum benefit period (amortization of waiting period). Glenday and Alam (1982b), for their part, note that the waiting period tends to reduce the incentive to claim benefits. Lastly, other studies emphasize that the allowable benefit period influences the actual benefit period. In short, it appears that these other provisions can affect claimants' behaviour. In practice, however, most empirical studies focus primarily on analyzing the effect of benefit rates.
7. We shall see that in the case of non-recipients, the effect may be to increase labour force participation. Consequently the effect of unemployment insurance is complex. It may reduce the motivation for a speedy return to the labour market in the case of benefit recipients, but it may also increase the motivation to participate in the labour market in the case of other segments of the population.
8. This effect, while possible at the individual level, has no meaning on the macroeconomic level. An increased collective search does not increase macroeconomic productivity.
9. This extent depends more particularly on the manner in which the program is controlled and applied.
10. Over the remainder of the individual's working life.
11. At the macroeconomic level, however, it must be kept in mind that the financing of these liquidities by taxpayers has the effect of reducing their own liquidity position and thus their mobility.
12. It should also be noted that because of the maximum benefit rate, the earnings replacement rate tends to be higher in low earnings regions than in high earnings regions.
13. Ultimately, however, such movements to low unemployment regions could create congestion problems and necessitate major expenditures for social and physical infrastruc-

tures. For a general discussion of these considerations as well as of the effect of transfer payments on labour markets and interregional income distribution, see Winer and Gauthier (1982).

14. Phase 2 of the program nevertheless encourages additional weeks by allowing another week of benefit for each two weeks of previous employment (minimum 25 weeks of previous employment).
15. As C. Green (1973) pointed out to us during a meeting on this question, such behaviour might lead to a high turnover of manpower and constitute a form of work sharing in a regional economy.
16. Indeed, the Canadian unemployment insurance program provides for quite special treatment of certain seasonal industries, such as the fishing industry, whereby many of the restrictive eligibility conditions are waived.
17. It is important to note, however, that certain provisions of the program tend to influence the duration of employment. Among these are the minimum employment duration requirement, the provision linking the extension of benefits to the length of previous employment (beyond 25 weeks of employment), and the provisions allowing the claimant to obtain earnings from employment without an interruption in his benefits.
18. In Quebec, for example, the relative minimum wage increased appreciably over the period 1972-76.
19. In Canada, Glenday and Alam (1982b), using a similar approach, found that the length of unemployment of benefit recipients was 20.9 weeks on average, as compared to only 5.5 weeks for non-recipients. The Hasan and Gera study (1982) controlled for various socio-demographic factors (age, sex, marital status, etc.) and economic factors (education, level of earnings, savings, etc.) and found that unemployment insurance beneficiaries tended to be unemployed from 8 to 11 weeks longer than non-beneficiaries. However, the authors caution that their findings are not comparable with those shown in Table 5-1, mainly because of major methodological differences.
20. These estimates are derived from the hypothesis that the 1979 changes reduced the induced unemployment duration noted prior to changes (four weeks, according to Rea, 1977) by one half-week. The econometric study of Beach and Kaliski (1983) indicates that the changes made to unemployment insurance (in particular the reduction of benefits) increased the propensity to move from unemployment to employment and reduced the propensity to remain unemployed (p. 169).
21. In a preliminary version of this study, we estimated these income and production losses at \$910 million: 1.3 million claimants affected, \$200 of production lost per week per claimant (available salary), and 3.5 weeks of induced unemployment. These estimates would be larger if one were to go by the figures of Hasan and Gera (1982) as to the effect of unemployment insurance on the induced duration of unemployment (8 to 11 weeks) among claimants.
22. One month = four weeks. With the maximum benefit period set at 25 weeks, the percentage increase is 16 percent. Assuming an initial benefit rate of 50 percent, a 16 percent increase represents a change of 0.08 percentage points in the benefit rate.
23. Where the length of unemployment is 14 weeks, a reduction of 6.5 percent breaks down to a reduction of 0.85 weeks. Thus, the 0.08 point increase in the benefit rate increases the length of unemployment by 0.8 weeks, but if this very increase reduces job search intensity by 0.85 weeks, there is a certain counterbalancing effect. In fact, depending on the average length of unemployment used as a point of departure (Barron and Gilley, 1979, do not inform us on this point), the net effect will be either positive or negative. There may be a net decrease in the job search and hence in post-unemployment earnings and job stability. However, extending the search over time may also have positive aspects.
24. On the question of the effect of an additional period of job search on post-unemployment earnings, the Canadian study by Hasan and Gera (1982) seeks above all to show, after controlling for various factors, that this additional period would in fact tend to lead to marginally lower earnings as compared to those preceding unemployment.
25. The author also takes account of various socio-demographic characteristics, as well as occupation, industrial sector, etc. Two states are examined: Arizona (more than 5,000 observations) and Pennsylvania (more than 3,000 observations).

26. At the microeconomic level, this effect is entirely plausible. However, at the macroeconomic level, earnings cannot be higher in the aggregate except by way of inflationary pressures.
27. It was also suggested to us that the accelerated development of the primary resources sector during this period may have been responsible for part of this behaviour.
28. It would have been interesting here to discuss the federal work-sharing program in conjunction with unemployment insurance. However, in our opinion such a discussion would call for a thorough analysis of the question, and we prefer merely to point it out rather than deal with it superficially.
29. For further details on this subject, see Glenday and Alam (1982a), in which the authors calculate subsidy rates by sector (higher in seasonal sectors), dependency rates (income from unemployment insurance in relation to total income) by sector (higher in seasonal sectors), seasonal employment and unemployment as a proportion of total employment and unemployment respectively (lower in the first case and higher in the second). In short, they evaluate the relative scope of "protection" of seasonal jobs. It is thus that the financing side of unemployment insurance, like the expenditure side, can influence the behaviour of actors in the economy. One of the points raised in the study by Professor Kesselman (1983) is that premiums are shared among employers, employees and consumers, and that they affect labour supply and demand (the maximum insurable reduces the expansion of employment to the benefit of the most "qualified" workers and overtime). In short, we have discussed here only some of the main aspects of the impact of the financing of this program. For further details, see Kesselman.
30. This benefit rate is drawn from the studies of Baily (1977), Flemming (1978) and Baily (1978). It is obtained by estimating the costs and benefits of unemployment insurance. The costs are calculated on the basis of the loss of production associated with extension of unemployment duration. The benefits are estimated on the basis of the satisfaction associated with the stabilization of consumption. It may be determined on this basis that at the point at which marginal costs are equal to marginal benefits, the benefit rate reaches its optimal level. It should be recalled, incidentally, that a benefit rate of 50 percent may be equivalent to an earnings replacement rate varying from 50 percent to 60 percent.
31. It can be demonstrated that in the final analysis, an unemployment insurance program financed entirely on the basis of risk-related premiums would not be optimal. Changes along these lines could, however, result in a considerable improvement over a program in which there are no risk-related premiums.
32. The impact of unemployment insurance, which is felt not only on employment and unemployment but also on production, is not the same when the economy is characterized by a high degree of Keynesian unemployment or by an appreciable degree of classical unemployment, as has been shown by studies on disequilibrium (Hung and Lefebvre, 1981).

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Survey of Pension Issues

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There is renewed interest among economists in the economic impact of aging populations. Low rates of fertility combined with increases in life expectancy explain this in part, along with the maturation of public pension plans in Canada. In the near future — before 1990 — the Canada Pension Plan and the Régie des rentes du Québec will pay benefits for a given year that exceed the contributions received.

The purpose of this paper is twofold. First, it presents a survey of the literature on different aspects of pension plans. This survey begins with an examination of the demographic setting. Next, it considers the source and level of the income of the elderly. It then describes the existing public and private components of the pension system and discusses the inter-generational effects of the public system. Another broad category of problems described in the literature on pensions is the disincentive effects of public programs, which are reviewed. The second purpose of the paper is to review Canadian studies on possible reforms to the pension system that have been put forward since 1970, and also to evaluate them.

The Demographic Setting

The present debate over pensions in Canada has its roots in the simultaneous occurrence of demographic changes and the maturation of public pension plans. Table 6-1 shows the evolution of some demographic statistics over the last 50 years. The fertility rate has been dropping since the beginning of the 1960s and has now fallen below the replacement rate of about 2.1 children needed to prevent a decrease in the population of a country with a zero net migration. Simultaneously, the life expectancy of both males and females has been steadily increasing. However, in Canada there has been a positive in-migration every year since 1951. If

TABLE 6-1 Demographic Statistics, Canada, Selected Years, 1931-81

	Fertility Rate ^a	Life Expectancy ^b	
		Male	Female
1931	3.20	60.0	62.1
1936	2.70	n.a.	n.a.
1941	2.83	63.0	66.3
1946	3.37	n.a.	n.a.
1951	3.50	66.3	70.8
1956	3.86	67.6	72.9
1961	3.84	68.4	74.2
1966	2.81	68.8	75.2
1971	2.19	69.3	76.4
1976	1.83	70.2	77.5
1981	1.68	71.9	78.0

Source: David K. Foot, *Canada's Population Outlook*, Canadian Institute for Economic Policy (Toronto: James Lorimer, 1982); and estimates by the author based on data supplied by the Department of Insurance and Statistics Canada.

a. Children per woman.

b. At birth.

n.a. Not available.

sufficiently high, this inflow can more than compensate for low birthrates and may lead to an increase in the Canadian population.

The age-sex composition of immigrants to Canada has changed over the 1933-79 period (Foot, 1982). Between 1971 and 1979, the proportion of working-age immigrants, those aged 15 to 64 years, has decreased slightly among men, but has been fairly constant among women. The percentage of pre-working-age immigrants has been fairly constant. However, the percentage of elderly people has clearly been rising, from 3.2 percent of all immigrants in 1971 to 5.3 percent in 1979. These results suggest an increase in the ratio of dependants to working-age persons among immigrants to Canada.

The combination of older immigrants, a lower fertility rate, and a lower mortality rate has resulted in the dependency ratios shown in Table 6-2.

The dependency ratio is calculated by dividing the number of individuals in the two dependent age groups defined as dependants, the young (aged zero to 14 years) and the elderly (aged 65 years and over) by the working-age population. The dependency ratio stays constant if the composition of the population does not change or if the decrease in the proportion of young is equal to the increase in the proportion of elderly. Therefore, an aging population does not necessarily imply an increasing dependency ratio (especially if one considers the age of retirement as being endogenous). Table 6-2 shows that the dependency ratio in 1941 was 0.53 persons of non-working age for every person of working age. With the baby boom generation, this ratio reached 0.71 by 1961, the highest figure since 1881. Values around 0.5 were experienced in 1981 and are projected to continue for the next 30 years. Thereafter, the ratio will go up but will remain lower than the values observed between 1931 and 1981. The pro-

TABLE 6-2 Dependency Ratios: Historical and Predicted, Canada, 1931–2051

Historical		Predicted ^b	
Year	Dependency Ratio ^a	Year	Dependency Ratio
1931	0.59	1991	0.49
1941	0.53	2001	0.46
1951	0.62	2011	0.45
1961	0.71	2021	0.52
1971	0.61	2031	0.59
1981	0.48	2041	0.58
		2051	0.59

Source: David K. Foot, *Canada's Population Outlook*, Canadian Institute for Economic Policy (Toronto: James Lorimer, 1982); and estimates by the author based on census data (for 1981) supplied by Statistics Canada.

- a. Number of dependent persons per person of working age (15 to 64 years).
b. Based on a continuation of recent trends: fertility rate of 1978, mortality rate of 1971–76, and net international migration of +65,000 persons yearly.

jected values of the dependency ratio are almost insensitive to changes in the size of the projected population. The value of that ratio for the year 2001 varies between 0.52 and 0.44, depending on the assumptions made (Foot, 1982, p. 131).

Dependency ratios, however, do not reflect one important change that will occur in the make-up of the population after 1981. This is the declining proportion of young Canadians in the population, a decline that more than offsets the increase in the proportion of elderly, thus keeping the dependency ratios at historically low levels. It means that the change in dependency ratios will be due more and more to the elderly, not to the young. This phenomenon is of particular importance not only for the pension system but also for the allocation of resources in the economy, particularly in health and education.

Since the projected dependency ratios show that there will be a lower number of dependent persons relative to the number of persons of working age from 1991 onward, compared with 1971, one might think that the total cost of servicing the dependent segment of the population will be reduced. This view however, implicitly requires two assumptions. The first is that costs are the same in various sectors of the economy and that resources may be shifted from one sector to another without problems. This assumption implies that resources used in education, for example, could easily be transferred and used in providing health care. The second assumption is that there are no economies of scale in the provision of these various services, and that the per capita cost in a given sector is the same whatever the number of users, whether they be school children or elderly people. However, according to Foot (1982, pp. 138–39), the cost of servicing an elderly person is between one and three times the cost of servicing a young person for a given year, not including the cost of such things as

child tax credits or family allowances. For this reason, Foot constructs a weighted dependency ratio, using the relative costs of servicing different segments of the population as weights, in order to examine the impact of demographic changes on public expenditures. He finds that pressures on public expenditures in the late 1970s were at a very low level and will remain low until the end of the 1980s. Beyond 1990 and until 2030, they will remain at recent historical levels and below those experienced during the baby boom years.

In the specific case of pensions, Foot concludes that the demographic pressures on expenditures will not be as dramatic as one may think. He bases this conclusion on four factors. First, not all pensions are financed on a pay-as-you-go basis. Second, if the female participation rate continues to increase, there will be a higher number of working Canadians to support the elderly. Third, if there are increases in productivity, they should lead to increases in output and income. Fourth, there might be some economies of scale in the provision of pensions.

These factors appear to be far from certain. The first factor mentioned by Foot, though, is particularly interesting since several studies on the effects of demographic changes on pension costs focus only on the effects on the Canada Pension Plan (CPP), which is financed through a payroll tax. Two other components of the public pension system, however, are even more important in terms of government expenditures. These are the Old Age Security (OAS) and Guaranteed Income Supplement (GIS), which are financed out of general revenue. Hamilton and Whalley (1983) conclude that the funding crisis will be more important in these cases than for the CPP. One has to be cautious, however, when using demographic projections, since they are based on hypothetical fertility rates and international migration levels. Even the projected mortality hypotheses have been challenged recently, as by Stone and Fletcher (1983).

These demographic changes will have a great impact on the public pension system for two reasons. First, the CPP is essentially financed on a pay-as-you-go basis, although it was partially funded when first established. This means that inter-generational transfers will be involved as the age structure of the population changes. The financial factor identified as a catalyst in the debate over pension plans is the maturation of the CPP and the Régime de rentes du Québec (RRQ). These two plans were introduced in 1966 and are now mature in the sense that they pay full benefits to a greater number of beneficiaries than they were doing prior to 1976. Hence, those who retired in 1976 and after got full pensions even if they had only contributed to the plans for 10 years or so. These people therefore get more than they paid for. Moreover, there are increasingly more people retiring as the population ages.

Second, since the OAS and GIS are financed out of general revenue, the cost to the federal treasury is likely to increase, since fewer people are expected to work and so pay taxes. This situation implies that an inter-

generational equity judgment has to be made on whether we want future generations to pay higher contributions and get the same benefits, or whether we wish to keep contributions fixed and give them smaller benefits. In either case, a transfer between workers and pensioners is implied. This is contrary to Foot's conclusions regarding his anticipation of an increase in the number of working Canadians. However, the premises on which Foot bases his analysis do not appear too sound. Therefore the scenario of increasing costs to the Treasury is more likely to be realized than Foot's expectations of increasing numbers of taxpayers and pension contributors.

Economic Situation of the Elderly

The economic situation of the elderly is important to understanding the ongoing pension debate. This brief section reviews recent evidence from two sources: the background note no. 1 of the green paper on pensions (Canada, House of Commons, 1982) and a National Council of Welfare (1984) study.

The background note of the green paper on pensions studies the sources of income among the elderly. Their average income in 1979 was \$7,792. For females, this figure was \$5,983 and for males it was \$10,602. Public pensions provided 41.1 percent of the average income (50.5 percent in the case of women and 33.7 percent in the case of men), and private pension plans provided 11.4 percent (7.8 percent for women and 14.2 percent for men). The relative importance of public pensions in providing the elderly with income decreases steadily as income rises. Thus, 71.1 percent of the income of elderly individuals with incomes under \$10,000 comes from public sources while for elderly individuals who earn between \$10,000 and \$25,000, this proportion drops to 21.3 percent. Public pensions in Canada replace nearly 60 percent of average pre-retirement income. For people earning half the average income, the replacement rate is 100 percent and for those earning twice this amount, the replacement rate is 25 percent. The importance of GIS is greater for women, while CPP is understandably relatively more important for men, since more men than women worked prior to retirement.

The authors of the green paper conclude on the basis of these income figures that public pensions are progressive while private pensions are regressive. However, contributions paid in order to receive these benefits should be taken into account before reaching any conclusion on the pension system's progressiveness. The Lazear Report (Canada, House of Commons, 1980) concludes after looking at the public pension system that it is progressive when contributions are taken into account. In present value terms, 20 percent of the poorest members of society receive 50 percent more in benefits than they paid in contributions, whereas 20 percent of the wealthiest receive only one-half of what they paid. The existing public system is therefore transferring money from the rich to the poor.

The amount received by the poor, however, is not always adequate when compared with poverty lines, especially for single women. Women received on average \$5,982 in 1979. This is less than the Statistics Canada low income cut-off even for a single individual unless the person lives in a rural area. According to Statistics Canada (using their poverty lines), in 1979, 61.2 percent of single elderly Canadians were poor. Seventy percent of poor, aged single persons had income 20 percent or more below the poverty line, and the majority of these were women.

The National Council of Welfare (1984) finds that in 1982 the median income of families headed by elderly persons was \$16,967, while the figure for unattached elderly individuals was \$7,458, compared with averages for the population as a whole of \$29,246 for families and \$11,369 for unattached individuals. Most elderly unattached individuals were women with average incomes of \$6,876; the corresponding figure for unattached men was \$8,026. The median income of unattached elderly Canadians is about 44 percent of that for families headed by elderly individuals. However, it has been calculated that an individual needs two-thirds of what a family needs to achieve the same standards of living (Canada, Department of National Health and Welfare, 1979). Clearly, therefore, unattached individuals, mainly women, are far worse off than other elderly persons. For example, 80 percent of elderly women have incomes of less than \$10,000. Unattached women aged 65 years and over rely more heavily on governments than elderly men do. Some 53.3 percent of the income of unattached elderly women in 1981 came from public sources while the comparable figure for elderly men was 32.3 percent. Finally, although elderly Canadians who own their homes tend to be better off than those who rent, the percentage of elderly women owning a house is only half that of elderly men.

This analysis of the economic situation among the elderly reveals the fact that women are in a more difficult situation than men and, more specifically, that single elderly women are in the worst situation. Most beneficiaries under all public programs are female, the majority being surviving spouses. Survivor's benefits and the pension treatment of women are therefore important issues in the pension reform debate.

This latter point is a very important issue since it is related to a more fundamental one, the real purpose of public pensions. Should Canada favour a redistributive approach, which accepts wealth transfers from men to women and from young to elderly? Or would we prefer a pure savings approach where an individual's pension would strictly depend on his or her past savings? In other words, we must decide whether we want our public system to provide an adequate replacement income or only a safety net for the poorest element of society. This is the essential choice to be made in deciding what we want to achieve through a reform of the present public and private pension system.

The Public and Private Pension Systems

The Public Pension System and Its Financing

There are five components in our public pension system. They are: the Old Age Security (OAS), the Guaranteed Income Supplement (GIS), the Spouse's Allowance (SA), the Canada Pension Plan and the Régime de rentes du Québec (CPP/RRQ), and the provincial supplements to the elderly. Table 6-3 shows the evolution of the payout rates over time of the OAS and GIS.

The original Old Age Pension Act was enacted in 1927 and provided for provincial provision of pensions, of which the federal government paid half the cost up to a maximum of \$20 a month. Pensions were restricted to persons aged 70 years and over who could fulfill residence and means test requirements. The federal share was increased to three-quarters by an amendment in 1931. The pension was increased to \$25 a month in 1943, to \$30 in 1947, and to \$40 in 1949.

The Old Age Security Act was implemented in 1952, with a \$40 pension provided to Canadians aged 70 years and over paid solely by the federal government. An annual cost-of-living adjustment with a maximum of 2 percent was legislated in 1965, to be effective in 1968. On April 1, 1971, the old age pension was made subject to an annual full cost-of-living adjustment. In September 1973, another change allowed for quarterly adjustment of both the pension and the guaranteed income supplement to reflect increases in the cost of living. However, in 1983 a limit of 6 percent was imposed on the indexing factor applicable to the old age pension and in 1984 a limit of 5 percent was imposed. No corresponding limit was imposed on the guaranteed income supplement component.

An amendment was passed in 1965 to provide for an annual one-year reduction in the age of eligibility for OAS. The eligibility age thus became 65 years in 1970. A combination of discretionary and automatic changes in the amount payable have been made, bringing the OAS pension to \$263.78 in 1984 from \$40 in 1952.¹

The second component of the public pension system is the Guaranteed Income Supplement. Introduced in 1967 to ease the transition to the CPP/RRQ system, it is paid according to need rather than to all elderly Canadians. The GIS was also subject to a maximum cost-of-living adjustment of 2 percent between 1967 and 1973. Full escalation on a quarterly basis has been provided since 1973. The GIS was granted tax-exempt status in 1972, but the old age pension remained taxable. Since 1971, the flat-rate pension is treated as income for GIS eligibility purposes, directing money to the poorest elements of society. Thus, 58 percent of OAS recipients were also receiving the GIS in 1972–73, compared with 53 percent also receiving GIS in 1981–82. This reduction can probably be explained by the maturation of the CPP/RRQ in 1976.

TABLE 6-3 Maximum Monthly Pension under Old Age Security Act, Canada, 1965-84

Canada, 1965-84					
Date Effective	Basic Pension	Guaranteed Income Supplement		Maximum Pension	
		Single	Married Couple	Single	Married Couple
(dollars)					
1/01/52	40.00	—	—	40.00	—
1/07/57	46.00	—	—	46.00	—
1/11/57	55.00	—	—	55.00	—
1/06/62	65.00	—	—	65.00	—
1/10/63	75.00	—	—	75.00	—
1/01/67	75.00	30.00	—	105.00	—
1/01/68	76.50	30.60	—	107.10	—
1/01/69	78.00	31.20	—	109.20	—
1/01/70	79.58	31.83	—	111.41	—
1/04/71	80.00	55.00	95.00	135.00	255.00
1/01/72	82.88	67.12	119.24	150.00	285.00
1/04/73	100.00	70.14	124.60	170.14	324.60
1/10/73	105.30	73.86	131.20	179.16	341.80
1/01/74	108.14	75.85	134.74	183.99	351.02
1/01/75	120.06	84.21	149.58	204.27	389.70
1/01/76	132.90	93.22	165.56	226.12	431.36
1/01/77	141.34	99.13	176.06	240.47	458.74
1/01/78	153.44	107.62	191.12	261.06	498.00
1/01/79	167.21	137.28	228.30	304.49	562.72
1/01/80	182.42	149.76	249.04	332.18	613.88
1/04/80	186.80	153.35	255.02	340.15	628.62
1/07/80	191.28	192.03	296.14	383.31	678.70
1/10/80	196.83	197.60	304.72	394.43	698.38
1/01/81	202.14	202.94	312.94	405.08	717.22
1/04/81	208.20	209.03	322.32	417.23	738.72
1/07/81	214.86	215.72	332.64	430.58	762.36
1/10/81	221.74	222.62	343.28	444.36	786.76
1/01/82	227.73	228.63	352.54	456.36	808.00
1/04/82	232.97	233.89	360.64	466.86	826.58
1/07/82	239.73	240.67	371.10	480.40	850.56
1/10/82	246.92	247.89	382.24	494.81	876.08
1/01/83	251.12	252.10	388.74	503.22	890.88
1/01/84	263.78	265.60	409.72	529.38	937.28

Source: Canadian Tax Foundation, *The National Finances* (Toronto: CTF, 1984).

The third component of the system is the Spouse's Allowance, which applies to spouses, aged 60 to 64, of OAS recipients. Introduced in 1975, it provides a pension of one-half the sum of the maximum basic pension plus the maximum GIS benefit that would be paid if the spouse were 65 years or over.

In the fiscal year 1982–83, OAS payments totalled \$7 billion, GIS payments amounted to \$2.5 billion, and spouse's allowances were \$235 million. This totalled \$9.745 billion dollars, or 10.8 percent of all federal government expenses. Including CPP expenses for the fiscal year 1982–83, this figure equalled 14.2 percent of federal government expenses. However, since both CPP and OAS pensions are taxable, the net cost of providing them is smaller than indicated by these figures.

The financing of the public pension system is also central to the pensions debate. As mentioned earlier, the first major public pension program was the Old Age Pension. In 1952, the flat-rate pension to be paid was financed by a 2 percent manufacturer's sales tax, a 2 percent tax on corporation income, and a 2 percent tax on personal income (up to a maximum of \$60 per person). This financing scheme was instituted because, on the one hand, the labour groups were strongly against means testing and were asking for higher pensions and, on the other hand, the business sector favoured a contributory plan to keep employees informed of the costs of providing them with pensions. Furthermore, this was supposed to give authorities a way of controlling pension expenditures. However, it did not work. From the creation of the fund in 1952 to 1960, it was continually in deficit but pensions were nonetheless increased twice. In 1960, the financing formula was raised to 3 percent for each of the federal taxes supporting pension payment, in an attempt to bring expenses and revenues of the fund into equilibrium. Modest surpluses were attained in 1961 and 1962. The earmarking of the three Old Age Security taxes was abolished in 1971, but the maintenance of a separate fund was continued until 1975. Bird (1976) concludes from his analysis of public pension financing that earmarking was "from the beginning a purely political gambit of no real economic meaning" (p. 172).

The fourth part of the Canadian pension system which has financing characteristics that are central to the pension debate is the CPP/RRQ. These two plans were legislated in 1965 and implemented in 1966. They are financed by payroll taxes that are related to a fund from which benefits are paid. Making a choice between a pay-as-you-go financing scheme and a fully funded one depends on how one sees the role of these plans. If social insurance is viewed as a substitute for private insurance, then the fully funded approach is favoured. On the other hand, if these plans are seen as a means of redistributing income, then a pay-as-you-go system is fully justified. The CPP was originally intended not to be funded. Quebec dissented and created its own plan, the RRQ. The federal and

Quebec governments, in order to ensure pension portability, made their plans identical, and both moved toward partly funded plans.

The CPP is now a combination of a public pension plan and a public savings plan, with the savings being turned over to provincial governments. Accumulated funds, plus contributions at the current rate, are sufficient to pay benefits for the next 20 years. However, this is true only if the provinces pay back the money they have borrowed from the fund. To do so, the provinces will have to either raise their taxes to find an alternative way of financing their expenditures or reduce expenditures. If they do not reimburse the money they owe, a continuation of the present level of benefits will mean higher contribution rates. Under current projections, this situation will first occur in 1985.

The analysis of the inter-generational burden of the CPP/RRQ is more complicated than for the OAS/GIS, because of their mixed nature of public pension and public savings plans. The public pension plan aspect is covered by pension taxes paid by those working now. The savings aspect of the CPP is less evident, because it is not clear that the funds accumulated will be used to cover the costs of promised pensions to workers. The RRQ, on the other hand, has 30 percent of its funds invested in private capital markets. This means that the outside income from these investments, coupled with their possible sale, would pay part of the future pensions of workers. The benefits derived by future generations from the CPP funds thus depend in part on the value of the increased provincial government expenditures that are made possible now by these savings. They also depend on the extent to which provinces really save money on their debt financing by borrowing at a lower interest rate than is otherwise available. Thus, the major difference between the inter-generational aspects of the CPP and those of the RRQ lies in the portion of the RRQ funds invested in private capital markets.

The fifth component of the Canadian public pension system is composed of the provincial supplements. The figures presented in Table 6-4 show that provincial support available for the elderly varies, from nothing in some provinces to \$2,250 a year for a married couple in Alberta. The second striking feature of these numbers is that in Ontario, Manitoba and British Columbia, single people receive less than half the benefits of married people. In the remaining provinces with provincial programs — Nova Scotia, Saskatchewan and Alberta — single people get half (or slightly more) of the benefits given to couples. Financial problems faced by elderly single women are not addressed at all by these provincial supplements.

Public Pensions and Inter-generational Transfers

Public pensions can involve inter-generational transfers from the workers to the elderly in each period. A program as complex as the CPP inevitably redistributes wealth among different groups of people. We have already

TABLE 6-4 Provincial Supplements for the Elderly, 1983

	Program	Year of Introduction	Annual Benefits	
			Single	Married
Newfoundland	—	—	—	—
Prince Edward Island	—	—	—	—
Nova Scotia	Municipal Social Assistance	1973	219.00	438.00
New Brunswick	—	—	—	—
Quebec	—	—	—	—
Ontario	Guaranteed Annual Income System	1974	586.56	1,915.44
Manitoba	Manitoba Supplements for Seniors	1974	187.68	404.64
Saskatchewan	Saskatchewan Income Plan	1975	300.00	540.00
Alberta	Alberta Assured Income Plan for Need	1973	1,140.00	2,250.00
British Columbia	Guaranteed Available Income	1976	466.56	1,195.92

Source: Colleen Hamilton and John Whalley, "Reforming Public Pensions in Canada: Issues and Options," in *Pensions Today and Tomorrow: Background Studies*, edited by David W. Conklin, Jalynn H. Bennett, and Thomas J. Courchene (Toronto: Ontario Economic Council, 1984), pp. 81-82.

addressed in part the inter-generational aspects. Another aspect that is worth exploring here is the extent to which intra-generational transfers are implied by public pension plans. Since they are fully portable and benefits are immediately vested, the redistribution effects occurring between contributors are related to the financing of the public pension plans. This is quite different from the redistributive aspects of private pension plans, in which the portability and vesting characteristics have a greater impact on the distribution of pension burden among employees than the financing schemes have.

It is necessary, in order to give a good picture of the redistribution of income involved in public programs, to distinguish between the effects of benefits and contributions, and to decide whether to consider them separately or as a package. In the case of OAS, the analysis is quite straightforward. Since 1971, OAS payments have been treated as income for income tax purposes. This implies that the government claims back part of it from non-poor taxpayers through the income tax system. Furthermore, OAS is financed through general tax revenue. Thus, one expects the distribution of the tax burden of general tax revenues to apply to the financing of OAS as well.

There is, however, a disagreement in the economic literature over the joint redistributive analysis of the OAS and income-tested programs like GIS. On the one hand, since GIS eligibility is linked to OAS eligibility, it is logical to tie these two programs together in any analysis. As is the case for OAS, GIS is financed through general tax revenue, and so is the Spouse's Allowance. The distributional aspects of contributions are therefore the same as those of general revenue taxes. GIS, on the other hand, is not taxable. However, as a rule, GIS payments should not be received by someone who pays personal income tax. This means that GIS non-taxability has little if any distributional impact in practice unless the recipients have investment income as well. Mendelson (1981), in an attempt to evaluate the relative merits of the selectivity and the universality principles, calculates the distributional aspects of OAS and GIS. He concludes that net benefits are progressive if the necessary tax to pay for them is taken into account. He does not address the effects of the CPP.

The redistributive aspects of the CPP/RRQ, however, are more difficult to analyze. There are two ways of analyzing them. The first would be to consider the plan as a transfer program for the elderly financed through a payroll tax. The second would be to see it as a savings program. The latter view seems less justified, because the link between benefits and contributions is far from direct and because of the absence of contractual obligation by the government to maintain both at their present levels. Moreover, both the CPP and RRQ are far from being actuarially sound. One could argue that the political viability of these programs depends on the public belief that their contributions really serve to pay for their benefits. Such a stance implies that the real distributional impacts of its

financing are less important than the perceived ones. This argument does not mean, however, that we should not study the particular features of the actual financing system simply because no other structure is politically feasible. One has to be aware of the impacts of the present system, whether it is maintained or altered.

One approach used in the literature on this topic is to separate analytically the contributions and benefits, based on the concern that payroll taxes are particularly regressive. Brittain (1972) adopts this principle. However, this view of redistribution does not appear meaningful, because it encompasses only a very narrow horizon and does not take into account the fact that some people who make large contributions relative to their income could also receive large benefits relative to their income. Such a result could hardly be called regressive.

The second approach is to look at both contributions and benefits in either an annual or a lifetime framework. It is important to note that the latter is based on the assumption that the system and, in particular, the real income of contributors will stay the same over the lifespan of the individuals studied. Several authors, including Bird (1976), Pesando and Rea (1977), Rea (1981), and the Economic Council of Canada (1979) opt for this framework. Their findings are now reviewed.

Bird finds that the benefit/tax ratio is greater for those with smaller earnings than for those with larger earnings. This result is explained by the fact that the tax is paid on earnings over a certain yearly basic exemption (*YBE*) up to the year's maximum pensionable earnings (*YMPE*). (where contributions = 0.018 x (*YMPE* - *YBE*) if *Y* > *YMPE*.) Benefits, on the other hand, are based on the individual's average earnings as a percentage of the *YMPE*.

$$\text{Benefits} = \frac{\sum_{i=1}^n \frac{\text{contributory earnings}_i}{\text{YMPE}_i}}{n}$$

where *n* = years worked.

Since the rise in the benefit/tax ratio is worth more to people with low earnings, contributions are progressive up to an income equal to the *YMPE*. Over that amount they become regressive, since the maximum contributions are fixed in absolute terms. The benefit/tax ratio is affected by some personal characteristics of the individual, such as marital status or age. The benefits expected by single people are less than those expected by married contributors because of the existence of survivor's benefits. For an individual over 18 years in 1966, the year in which the CPP was introduced, the subsidy received would be inversely proportional to the difference between the age at the commencement of benefits and age 18.

Pesando and Rea (1977) outline the fact that it is impossible to generalize about the lifetime redistributive impacts of the CPP without making simpli-

fying assumptions. They calculate the net benefits — that is, benefits minus contributions — of a representative sample of individuals, using the age, sex, and provincial distribution of the 1966 census and information on labour force participation, earnings, unemployment, and so on from the 1972 Survey of Consumer Finances. Their calculations yield a pattern of CPP contributions and benefits which shows a redistribution of wealth toward the generations who were either near retirement or relatively old at the inception of the plan in 1966. The results show that the CPP net benefits alone tend to increase with earnings and family income, whether taxation is included or not. However, it should be noted that the value of this net benefit is highly sensitive to the discount rate chosen. The authors conclude that the CPP forces the poor to save more than they otherwise would and that different discount rates should be used for different income classes. A greater burden thus falls on the poor because they are forced to alter actual consumption patterns in order to pay the contributions. When GIS, OAS, and provincial supplements are included in the analysis, the conclusions are altered.² The CPP also redistributes wealth from single contributors to married ones. As for the redistribution between sexes, Pesando and Rea's model shows that if later cohorts of women contribute more to CPP over their lifetime and are entitled to their own pensions later on, any redistributive effect from men will be eliminated.

Rea (1981) uses the same model as Pesando and Rea but with new mortality and fertility assumptions, a different age-sex distribution of immigrants and emigrants, and an inflation rate slightly higher at 6 percent instead of 5 percent. This study explores the effects of demographic changes on the contribution rate needed until 2050. The CPP fund is predicted to be exhausted by the year 2007 if no changes are made to the actual contribution rate. After this date, the CPP will be on a pay-as-you-go basis, which is highly sensitive to demographic changes. The ratio of pensioners to workers will probably increase and the employee contribution rate could rise from the present 1.8 percent to 10 percent in 2030 if the benefits remain unchanged. At the current contribution rate, the CPP provides more income to those with higher permanent earnings, defined as the present value of lifetime income converted into a lifetime annuity in constant dollars. If contribution rates are to be increased in 2007, net benefits will be smaller for all income groups. When the author adds the OAS and GIS benefits, the total becomes progressive for the oldest generation (the 1910–14 cohort) but less so for younger generations. It becomes regressive for the 1960–64 cohort. The distributional impact of the tax used to finance these two programs is not included in Rea's analysis because of difficulty in determining which part of general revenues is used to finance them. This omission reduces the value of the conclusions drawn from such studies on the distributive impact of pension plans. Rea therefore concludes that the total public pension system seems progressive, although

it will be less so as the net CPP benefits tend toward zero. At this point, it operates on a pay-as-you-go basis.

Turning now to distributional differences between men and women and married and unmarried persons, men with children seem to get greater return from survivor's and spouse's benefits than women with children. This situation is explained by the earnings differential between the men and women. An interesting finding of Rea's study is that women are worse off and men are better off as a result of legislative changes that permit division of pension credits when a divorce occurs. Another finding worth mentioning is the greater benefit that would accrue to high income families, compared with low income families, if a dropout provision for years spent rearing young children were added to the present system. The contribution rate would have to be increased by 3 percentage points, thus reducing the net benefits paid to childless men and women. This is now beyond debate since Ontario, the last province opposing the inclusion of the child-rearing clause, has now approved it and this provision was included in the CPP in June 1983. The Economic Council of Canada (1979) presents Rea's results and emphasizes the impact of the demographic changes on the system.

One other study on this topic puts more emphasis on the links of the CPP financing system with the rest of the tax system. Kesselman (1979) stresses the fact that since the value of OAS benefits exceeds the income tax exemption for age, each recipient faces a net increment to his taxable income. This implies that the overall value of benefits decreases when income rises. Thus, the benefits of OAS are progressive.

A consensus on intra-generational equity seems to emerge from all these studies on two points. First, OAS and GIS seem to be quite progressive. Second, CPP net benefits are progressive for very low income people but become regressive at an income somewhere around the year's maximum pensionable earnings. The redistribution from unmarried to married contributors due to the existence of spouse's and survivor's benefits has already been established. The one between women and men can be attributed to differences in earnings between these two groups rather than to the benefit structure itself.

The inter-generational aspects of redistribution, on the other hand, seem to be twofold. First, there was a huge wealth transfer between the existing older generations and younger ones when the CPP was first enacted. Second, this phenomenon will be even more important if the CPP fund is allowed to disappear and the actual financing scheme is replaced by one on a pay-as-you-go basis.

Private Employer-Sponsored Pensions

Four and a half million Canadians (3.1 million men and 1.4 million women) or 42 percent of the number of employed Canadians in 1980 were members

of some 15,000 employer-sponsored pension plans. Two million of them were working in the public sector. Ninety-four percent of plan members were in defined benefit plans in which each year of service generates a right to a specified pension later on. Two types of defined benefit plan exist. The flat benefit plan gives rise to a monthly pension of a fixed-dollar amount multiplied by the number of pensionable years. Some 40 percent of employer-sponsored plans in the private sector are of this type. The other type of defined benefit plan, called the unit benefit, gives the worker a specific fraction of pre-retirement earnings for each year of pensionable service. The value of the pension entitlement depends on the way in which pre-retirement earnings are measured (final years or best years or career average). The flat benefit plan is usually non-contributory for employees while the cost of the unit benefit plan is normally shared between employees and employers. Apart from defined benefit plans, there are defined contribution plans in which the amount of pension is determined by the value of the annuity that the sum of lifetime contributions and the returns on them can purchase at retirement. Usually both the employer and the employee contribute to this type of plan. Table 6-5 provides information on existing employer-sponsored pension plans.

The private pension system in Canada plays a role in providing adequate replacement income for maintaining the living standards of medium income and high income persons in their retirement years. Canada's public pension system allows only low income people to achieve an adequate percentage of replacement income through the OAS/GIS, CPP/RRQ, and the provincial "top-off" plans. This feature of the public system is particularly striking in comparison with provisions in other countries, and it also highlights the limitations of our private pension system in filling this gap (Ontario Economic Council, 1983).

Several characteristics of this system are of special interest since they are central to the debate on pension reform. The most important one is the debate over the effect of inflation on the value of pension entitlements in the private sector, where automatic indexation clauses rarely exist. The second feature of private pension plans often discussed is the vesting rule that precludes employees from accumulating adequate pension entitlements when they change employment. The third catalyst in the discussion is the fact that in the event of firm shutdowns, insolvency, or any other event leading to the termination of the plan, no assurance is given that the workers will get their entitled pension. The green paper on pensions (Canada, House of Commons, 1982) highlights some other features of private pension plans that need to be reformed. However, they are not as central to the discussion.

Private Retirement Savings

Private retirement savings are a very important way to provide security for retirement. In 1979, 25.5 percent of the income of elderly persons came

TABLE 6-5 Characteristics of Representative Employer-Sponsored Pension Plans

Characteristics	Private Sector Plans				Public Sector Plans		
	Money Purchase	Flat Benefit	Career Average	Final or Best Average		Not Fully Indexed	Fully Indexed
				Contributory	Non-Contributory		
Number of Plans	5,887	1,243	4,299	1,132	944	661	29
Members (thousand)	211.5	956.6	545.4	424.8	311.2	1,028.9	941.0
Members' (as a % of all members) Rate	4.7	21.4	12.2	9.5	7.0	23.0	21.0
Typical Unit							
Benefit Rate (%)	n.a.	12.50	1.80	1.85	1.41	2.00	2.00
Nominal Employee Contribution Rate ^a	5.0	nil	5.0	5.0	nil	6.4	7.5
Average Employee Contribution Rate ^c	3.9	nil	3.9	3.9	nil	5.3	6.4

Source: Canada, House of Commons, *Better Pensions for Canadians* (Ottawa: Minister of Supply and Services Canada, 1982), p. 60.

Note: Employers' contributions are not included in this table because, in the case of defined benefit plans, they are not fixed but equal to what is needed to pay a given pension (minus the employee's contribution).

a. Percentage of pay, excluding integration with CPP/RRQ.

b. Percentage of pay, including integration with CPP/RRQ.

n.a. Not available.

from investment income and 12.9 percent came from private pensions and annuities (Canada, House of Commons, 1982), with part of annuity income representing returns on money accumulated in Registered Retirement Savings Plans (RRSPs). In 1981, two million Canadians contributed an average of \$1,985 to an RRSP (Canada, Department of National Revenue, 1983). In 1984, contributions of up to \$3,500 minus the contributions made to an employer-sponsored pension plan are allowed for contributors who belong to such plans and up to \$5,500 for those who do not. These contributions are tax deductible. A range of tax incentives such as the investment tax credit for personal income tax purposes encourages other private investment.

The value of the tax savings obtained through RRSP contributions rises with marginal tax rates and as a result persons with medium and high incomes are more likely to use RRSPs to save for retirement. This may be socially acceptable, since our public pension system provides a generally adequate replacement income for low income people.

The redistributive and the efficiency aspects of public pension plans were noted above. The redistributive and allocative consequences of private pension plans remain to be studied. The redistributive impact of private pensions can be found at four different levels: access to tax assistance, inflation protection, mobility impediment, and sex-based pension differentials.

As mentioned earlier, tax assistance for paying public pension plan premiums like CPP or RRQ is the same for everybody. In the case of RRSPs, people with fluctuating incomes or who start to make payments to such retirement plans late in life are penalized.³ In the case of private pension plans, an employee's contributions up to \$3,500 a year are tax deductible. However, an employer's contributions on behalf of employees are not taken into account in this limit. This means that the real overall tax assistance could be very different for two employees who are members of different pension plans, even if they earn the same salary (especially if one of them is a member of a non-contributory pension plan, since he can also put up to \$3,500 into an RRSP).

The second redistributive feature of private pension plans lies in their varying provisions for protection against inflation. Pesando and Rea (1977) argue that a member of a defined benefit plan suffers a real wealth loss when inflation occurs during his working years, unless the pension is calculated on the basis of final earnings. Members of money purchase plans, on the other hand, should not suffer real wealth losses due to inflation, since they can expect the real positive rate of return earned on their contributions not to vary with inflation. The issue of inflation is of greater importance during retirement years than it is during working years, since most private pensions are not indexed.

The third feature is mobility impediment. This problem does not exist in the case of public pensions since they are immediately vested and fully portable. The majority of private plans now provide vesting at 45 years

of age if the employee has worked at least 10 years for the same employer. This vesting rule makes sense if pension benefits are viewed as a form of deferred compensation. This view is widely supported by pension observers. Shiller and Weiss (1977) show that wages are lower for employees with larger pension entitlements. Delayed vesting could be used by employers as a substitute for a steeper pattern of wage increases to ensure that the skills the employee acquires through training and experience are not lost to them. In any case, this particular vesting structure redistributes wealth from employees who change employment to the employers if the lost pension entitlements serve to reduce employers' contributions, thus compensating them in part, fully, or more than fully for losses resulting from employee mobility. It could also redistribute income toward employees who do not change employment, if they pay less for their pension rights because of the departure of mobile employees.

A fourth redistributive feature is the fact that money purchase plans pay smaller annual pensions to women than to men, since women have a greater life expectancy on average than men. However, over the life of the retirees, nominal pension payments are equal between sexes.

The allocative impacts of private pension plans are related to two of the features that have redistributive impacts, namely, inflation protection and mobility impediments. As Summers (1982) points out, non-indexation of pensions could well be optimal if workers have diversified portfolios. Hurd and Shoven (1982) show that this is the case in the United States and that assets of elderly individuals are in fact protected against inflation. Mobility impediments introduced by the vesting and transferability characteristics of private pension plans also have efficiency aspects. The vesting characteristics of pension plans may be viewed as a type of insurance for employers to ensure that employees share part of the training costs. This implies that they cannot leave the firm without losing part of their benefits entitlements. The green paper on pensions (Canada, House of Commons, 1982) favours the implementation of a two-year vesting rule. However, this kind of rule could bring along steeper wage scales to provide the employer with insurance against losses incurred when employees quit.

Another factor with an efficiency impact, although it is as much related to public pension plans as to private ones, is the existence of mandatory retirement at age 65. This is permitted in every province except Quebec. The reason for mandatory retirement does not seem to be that older people become less productive. The literature on this topic, for example, Mitchell and Fields (1982), states that job experience and training offset any psychological decline. Moreover, the variance of productivity is bigger within a given age group than between age groups, which seems to indicate that some workers are productive irrespective of their age while others never are. However, the typical wage pattern of an individual (Lazear, 1982; Nalebuff and Zeckhauser, 1983) is such that the pay is usually lower

than the value of the marginal product for young workers, whereas the reverse is true as the worker approaches retirement. Hence compulsory retirement exists, it seems, to induce these individuals to quit their jobs. And as Pesando (1979) notes, the removal of mandatory retirement would have a very small effect on retirement decisions in practice, since wages would have to be lowered because of the increase in medical and disability insurance premiums incurred. Moreover, this measure would not permit the employer to keep only productive employees past 65 years of age. A screening device would become necessary.

Quebec has recently made pensions from the Régime de rentes du Québec available to people from 60 to 70 years of age, with actuarial adjustments. This was made necessary by the removal of mandatory retirement, so that individuals would not be forced to retire at age 65 in order to protect their pension income. It is, however, too early to judge the impact of these measures on retirement age. No legislation requires Canadians in general to retire at any specific age. The most relevant legislation is contained in the federal and provincial human rights acts, which generally proscribe discrimination based on age. However, most of these allow for retirement to be imposed at a specific age, usually 65 years. Court tests of the legality of mandatory retirement have become more frequent in recent years but their outcomes have varied by jurisdiction. Manitoba and New Brunswick courts have overturned retirement of specific people while British Columbia and Ontario courts have upheld imposed retirement. The Canadian Human Rights Commission has been trying to have mandatory retirement abolished, but a decision has not been taken yet since an interpretation of section 15(1) of the Charter of Rights is still awaited. Section 15 of the Charter will be in force on April 17, 1985.

Savings and Labour Supply Effects

This section reviews the impact of the existence of pension plans on savings and labour supply decisions.

Savings Effects

The analysis of the economic situation of the elderly so far has focussed more on income than on wealth. However, if pension plans are really savings plans, their existence should reduce private savings and, hence, reduce wealth. An unpublished analysis by Statistics Canada (1983) shows that the average family income of non-members of pension plans in 1977 was \$19,584 and that their average family wealth⁴ excluding pension rights was \$60,437. The corresponding figures for pension plan members were \$22,757 for income and \$45,825 for wealth. The interesting point here is that families not participating in pension plans have on average 32 percent greater wealth even though their average income is 16 percent lower than

for families that do participate. Hurd and Shoven (1982) show that the bulk of wealth held by elderly persons in the United States is in the form of housing, social security, and medicare. They also find that the real wealth of the elderly increased between 1969 and 1975 because most of their assets were protected from inflation. Only the wealthiest lost. This point is of particular interest since indexation is a central issue in the pension debate.

Summers (1982) shows that workers have diversified portfolios, so they do not need any indexation to keep their real income constant. This seems to indicate that personal savings could compensate for the non-existence of a pension plan. However, this conclusion must be weighed with care since this situation could be due to a greater variance of income among non-members than members, because non-members are often self-employed and some have very high incomes and hence substantial wealth.

The link between pensions and private savings has been extensively studied in the literature since the pioneering article on it by Feldstein (1974). He estimates in the context of a life-cycle model that household savings in the United States are 30 percent lower than they would otherwise be because of the presence of the social security system. Individuals in this context view expected social security benefits as wealth. Therefore, they diminish their private savings accumulation. However, Feldstein's findings are based on the assumption that public pensions are the only possible inter-generational transfers. In this framework, the response to social security is a decrease in private transfers to compensate for the increase in public ones in order to keep the overall level of transfers constant. After reexamining the evidence by using the same time series data framework, Barro (1978) argues that Feldstein's results are unwarranted. Barro and MacDonald (1979) examine the same issue but from a cross-sectional viewpoint, as Feldstein (1977) also does. The results of this study neither support nor reject the hypothesis concerning the reduction of private savings by public pensions. However, the estimation and data problems are more acute in a cross-section framework than in a time-series one.

Munnell (1974) finds that an increase in expected social benefits reduces private asset accumulation during working careers. However, this does not imply that aggregate savings are depressed, especially if Hamermesh's (1982) hypothesis that people seem to save more after retirement than if there were no public pensions is verified. Dicks-Mireaux and King (1982) find that pension wealth⁵ has a small but significant negative impact on private savings for 9,000 Canadian households. Boyle and Murray (1979) and Daly (1983) find conflicting results for Canada on the impact of public pensions on savings. Boyle and Murray find no effect from the CPP in a time series framework, while Daly finds a negative and significant impact of the CPP on RRSP contributions in a cross-sectional framework. However, as Barro and MacDonald (1979) mention, the latter framework is more difficult to work with and requires care in evaluating the results.

Pesando (1978) finds no evidence that the CPP has had a depressing effect on savings. Similarly, the Lazear Report (Canada, House of Commons, 1980) does not find a significant depressing effect on savings. An interesting point mentioned by Pesando (1978) is that there is one way in which savings could be decreased, and that is through integration of CPP with the employer-sponsored pension plans. The savings going through this channel would be automatically lowered.

Conclusions about the impact of public pensions on personal savings depend on the model used in analyzing it. If a Keynesian model of consumer spending is used, consumption and savings would decrease since contributions paid decrease income. If, on the other hand, a life-cycle model is used, then expected retirement income derived from these contributions would be taken into account and the permanent income would be greater, thus decreasing the need to save to maintain high retirement income. In a perfect life-cycle model, the entitlement to the present value of a dollar of expected pension means a decrease of the present value of a dollar of savings, though this holds only if there is no other form of inter-generational transfers. Given the small number of Canadian studies, it seems impossible to say whether there is a link between public pensions and private savings. Furthermore, the open nature of our economy, which weakens the link between domestic savings and investment, makes it difficult to predict the consequences on investment of a fall in domestic savings, even if it was clear that such a fall would take place.

Labour Effects

Savings impacts are not the only issue related to the allocative effects of public pension plans. Also to be considered are the labour incentive effects that play a role in determining the income available to the elderly. Under this label are two major effects: labour supply and retirement age decisions. Gordon (1983) and Blinder, Gordon, and Wise (1980) investigate the labour incentive effects of pensions empirically for the United States. They contradict the usual view that social security provides work disincentives for older men. Earlier studies generally show that the drop in the male labour participation rate could be attributed to an increase in social security benefits. Clarks, Kreps, and Spengler (1978) point out that the majority of these earlier studies reach the conclusion that labour supply is affected by looking at participation rates among age cohorts and/or by surveying the reasons given by people for their retirement decision.

An individual can decrease his or her labour supply in two ways, by reducing the number of hours worked or by quitting a job. Most studies do not make a distinction between the two. Moreover, a person could retire from a given job and work full-time somewhere else, which would introduce bias in the data. For all these reasons, the newer studies find no effect of social security on labour supply. The critical assumptions underlying these results are that benefits are subject to an earnings test, as in the United

States, and that actuarial adjustments for those who defer benefits are unfair in the sense that those individuals are penalized. Blinder et al. show that future benefits depend on current income and that one can gain more by working than by retiring even with the earnings test.

The results of the study by Blinder, Gordon and Wise (1980) cannot be transposed to Canada directly, however, because there is no earnings test in Canada for the OAS payments. Blinder et al. also point out that while automatic benefit recomputation does exist when current income changes, even government officials and academics who work on the computation of the benefits do not seem to understand it thoroughly. This lack of understanding, according to these authors, implies that the typical contributor knows even less about it. One solution to the disincentive effects of public pensions would therefore be to inform individuals about their pension entitlements and how they can maximize them.

Another issue should be raised in connection with this. The majority of studies on this topic find a work disincentive effect from pensions among men 62 to 64 years, who typically receive substantial wage subsidies in that they are now paid more than the value of their marginal product. Blinder et al. seem far from convinced that, even if work disincentive effects exist for these people, it is bad for society. Gordon (1983) finds the same results as Blinder et al.

As for the assumptions regarding actuarial adjustments, the Régime de rentes du Québec has already introduced an actuarially fair increase for the pensions of each age cohort when retirement occurs between 65 and 70 years of age and a decrease in pensions for those retiring between ages 60 and 65. However, the Canada Pension Plan does not actuarially adjust the benefits according to retirement age.

The retirement decision must also be looked at. Public pensions in Canada generally begin at age 65, with the exception of the Régime de rentes du Québec, which since 1983 can pay benefits to retirees aged anywhere between 60 and 70 years. The effect of having pensions beginning at a fixed age without choice in the majority of Canadian pension plans is believed to induce earlier retirement. Economic theory suggests that seven factors have an impact in determining the age of retirement. These are wages on the main job, wages on an alternate job, social security benefits, private wealth, private pension benefits, private pension contributions, and social security contributions. Three of these have been studied in the empirical literature, namely, wages on the main job, social security benefits, and private pensions benefits.

Boskin and Hurd (1978) examine other studies of the effect of social security on early retirement. They conclude that most retrospective studies of retired workers list poor health as the major reason for retirement, while econometric studies such as Feldstein's (1974) study of elderly male labour force participants regard increases in social security benefits as the major determinant of retirement.

The great majority of writers on this topic use current values of income as the explanatory variables, instead of streams of income as the theory dictates. Thus, most empirical studies suffer from omitted variables and measurement problems that could bias their results. Moreover, the data bases used are sometimes of doubtful quality. That is why Mitchell and Fields (1982) conclude that empirical investigation of the impact of wages and pensions on retirement does not tell us much.

Also noteworthy are the results of three more specific studies. Burkhauser and Turner (1980) make an interesting discovery: American workers tend to work more when they are young and retire earlier than they would if no pension plans existed. The net impact on aggregate production over their lifetime is therefore unclear. It could either increase or decrease. Pellechio (1979) assumes that old age security program financing is endogenously related to workers' retirement decisions. He finds that, although large social security benefits induce retirement, retirement decisions also have a great impact on the availability and size of these benefits. He also observes that workers probably work more when they are young in order to retire earlier. Gordon (1983) tries to evaluate the size of the net U.S. tax rate on labour income by taking into account the payroll tax, the earnings test, actuarial adjustments, and the relationship between future benefits and current earnings as well as income tax. He finds that the social security program provides a net subsidy to labour supply throughout most of a person's working life. This net tax rate becomes positive in years in which earnings do not enter into benefits computation, encouraging people to concentrate their work effort into those years which do enter the benefit formula. It seems that people have a strong incentive to work between the ages of 62 and 64 years and to quit soon after. This paper presents an interesting attempt to integrate the pension system with the broader framework of the tax system.

In summary, the effects of pensions on savings and labour incentives are far from clear. Therefore, it is very difficult to argue for or against any particular set of pension reforms on the basis of these incentive effects.

Reform Proposals and Evaluation

Proposals

Several pension reform proposals have been put forward since 1970. Some of them argue for radical changes and others only try to improve specific aspects of the pension system. This section describes the major proposals that have been made by the federal government and the provincial governments of Quebec and Ontario. Several other provincial governments have also published documents on specific aspects of pension reform which are not considered here.

The Federal White Paper on Income Security for Canadians (Canada, Department of National Health and Welfare, 1970) argues for OAS universality because it has been promised to everybody and individuals have planned for retirement expecting that they would get it. However, it also argues that OAS should not be indexed, whereas GIS should.

Québec, Cofirentes + (1977) bases its recommendations for that province on the premise that the state should eliminate poverty and create savings incentives to prevent any decreases in standard of living at retirement. The authors of the report consider two major functions of the pension system. The first one relates to the obligation of the government to provide through OAS an income equal to the poverty line. To this, CPP/RRQ benefits could be added to provide an income high enough to ensure that GIS would be received only by those who do not have access to CPP/RRQ. The second function consists in all “supplementary” plans to provide income replacement as such.

The report recommends that poor workers should not have to contribute to employer-sponsored plans. Contributions would be mandatory only for workers earning more than a given income. In fact, this position could well be considered a step toward a guaranteed minimum income. To ensure adequate retirement income, the report calls on the Régime de rentes du Québec to provide a pension of 37.5 percent rather than 25 percent of maximum pensionable earnings. This provision would entail raising the level of maximum pensionable earnings from 1977 onward for ten years until they equalled average industrial earnings. Survivor's benefit should be given for a fixed “adaptation” period and determined according to the number of dependent children, thus making the orphan's pension redundant. This benefit would be paid only to spouses aged over 35 and under 65 years, being adjusted proportionally to the survivor's age.

The report also recommends that the RRQ be financed on a partially funded basis with a time horizon of 25 years revised every five years. The reserve level kept in the fund would be given by the amount of pensions to be paid in the 26th year. The contribution structure would be changed for the employer, who would now pay contributions on his total wage bill regardless of the value of the maximum pensionable earnings.

The report also recommends an annual indexation of supplementary plans proportional to the difference between the realized rate of return and the one postulated when the fund was created. The Régime de rentes du Québec would set the maximum interest rate to be used equal to the economy-wide average real rate of return. Vesting would be automatic when the employee's age plus years of service reached 35 years or more. Employees' contributions would be reimbursed when a non-vested employee quits, along with the realized interest rate earned on them. Private deferred pensions would be administered by the Régie des rentes du Québec. The report also favours information disclosure to members (without specifying clearly which information).

The Economic Council of Canada study (1979) pays particular attention to the demographic impact on the future of the contribution structure as the population ages and examines the impact of such a structure on capital markets. The report recommends that the OAS and GIS be fixed according to a low income cut-off to prevent poverty among the elderly and that they continue to be indexed to the Consumer Price Index. Any real increase in the income of the elderly should come from increases in GIS only. This implies going away from universality toward selectivity. The report acknowledges possible problems attached to the latter but nonetheless recommends it. On the matter of CPP, the report recommends that contributions be increased gradually over the next few years to prevent financial problems and huge inter-generational transfers later on. The report focusses more on improvements to occupational pension plans in order to improve the system than on enlargements to the existing public plans. It recommends that gradual vesting occur over a five-year period and that the government sell price-indexed annuities. On government employee pension plans, it opts for a fully funded basis and segregation of this fund from consolidated revenue accounts. No particular position is taken with regard to elderly women.

The Federal Task Force on Retirement Income Policy (Canada, House of Commons, 1980) makes no specific recommendations but sets out four options for reforming earnings-related plans. These include strengthening occupational plans through mandated reforms; replacing defined benefit plans with defined contribution plans; instituting mandatory minimum benefit requirements for occupational pension plans; and enlarging CPP/RRQ benefits, with or without an opting-out clause. However, the authors do not believe the last option to be appropriate for low income earners, who should be exempted from any contribution increase. The report highlights the fact that, to provide for full replacement of income, benefits would have to be based on 40 to 45 percent of average pre-retirement income, up to 1.5 times the average industrial wage. This would mean contribution rates of nearly 20 percent by the year 2031. Nothing is proposed to help women specifically but a GIS increase by a shelter cost component is proposed to reduce poverty among the elderly.

The *Report of the Royal Commission on the Status of Pensions in Ontario* (Ontario, 1981) recommends an increase in GIS for single persons to bring it to 60 percent of the amount given to couples, and a taxing back of OAS for those with a taxable income of more than \$30,000. It favours no expansion of the CPP and no changes in its pay-as-you-go nature to ensure that provinces will not have to repay their debt. Benefits would be indexed to the average industrial wage before retirement and to the Consumer Price Index after. The Spouse's Allowance program should be phased out and homemakers should not be included in the CPP. The major recommendation made on private arrangements is the creation of a mandatory savings plan, to be called the Provincial Universal Retirement System (PURS), to which even part-time employees would have access. The

Commission favours a reallocation of funds toward those in need as opposed to a general increase in public pensions. Under this scheme, all income would be taken into account for means-tested programs, and OAS would be taxed back over a certain income. An inflation tax credit would be created to protect the elderly from inflation-related erosion of their income. This would not entail any further cost because it would be financed by the elimination of the actual age and pension exemptions.

The green paper on pensions (Canada, House of Commons, 1982) makes proposals that concentrate on enlarging the role of CPP to provide adequate retirement income. The benefit formula would remain essentially the same, still providing 25 percent of the yearly maximum pensionable earnings, but this amount would be increased until it equalled the average industrial wage. The proposals focus primarily on ways to improve survivor's benefits, by removing termination of payments in case of remarriage, increasing benefits, and splitting credits upon divorce, in order to help elderly women, who form the bulk of survivors. No mention is made of a possible expansion of OAS and/or GIS. For employer-sponsored plans, the paper proposes that benefits be vested after two years, with the employer paying for at least half of the vested benefits in the case of a terminating employee. The interest rate to be used to value pension benefits would be prescribed and would include an indexation component. A new savings vehicle would be created to improve portability. Greater information would be made available to pension plan members. Money purchase plans would be required to provide equal benefits to men and women.

The *Report of the Special Committee on Pension Reform* (Canada, House of Commons, 1983) proposes some reforms for public pension plans. The authors suggest that OAS, GIS, and CPP/RRQ benefits be indexed on a wage index, that GIS be increased by \$102 for singles, and that the allowance for spouses be made available to widows and widowers aged 60 to 64 years. The financing of the CPP is to be kept as it is and credit splitting is favoured. The most important proposal, however, is the inclusion of homemakers in the CPP retroactively to 1966 for those who reached age 65 since that time. The contribution rate for an employee with a non-working spouse would be increased by 0.3 percentage points, bringing it to 2.1 percent (unless the employee's income is insufficient). Indexation of employer-sponsored plans would be mandatory and the rate would be the difference between the consumer price index and 2.5 percent. Table 6-6 gives a summary of the most important reforms proposed by major groups. It gives a good picture of the degree of consensus achieved on these issues.

Action Plan for Pension Reform (Canada, House of Commons, 1984a) is a proposal in which the federal government sets out a plan for action. It discusses the issues put forward in the green paper on pensions and highlights the fact that the provinces should be consulted before several of the proposed changes are implemented.

TABLE 6-6 Public Pension Reform Proposals of Four Groups^a

	Québec, Cofirentes + (1977)	Economic Council of Canada (1979)	Ontario (1981)	Canada, House of Commons (1982)
Importance of OAS, GIS and CPP/RRQ	<ul style="list-style-type: none">• GIS-OAS should remain as a safety net and be higher than poverty lines• enlargement of RRQ	<ul style="list-style-type: none">• GIS-OAS should remain as a safety net, but real increases should be made only to GIS• no enlargement of CPP/RRQ	<ul style="list-style-type: none">• GIS-OAS should remain as a safety net, but real increases should be made only to GIS.• no enlargement of CPP/RRQ	<ul style="list-style-type: none">• benefits to single elderly Canadians should be increased as soon as possible• increase YMPE^a to AIW^b over three years
Funding of CPP/RRQ	<ul style="list-style-type: none">• review contribution rates every 5 years• keep a reserve in the fund for one year	<ul style="list-style-type: none">• increase contribution rates	<ul style="list-style-type: none">• increase contribution rates only when necessary to keep a contingency fund• keep a fund equal to twice the benefits for three years	<ul style="list-style-type: none">• increase contribution rates
Survivor & Disability Benefits	<ul style="list-style-type: none">• survivor benefits remain as of now for surviving spouses aged over 35 years	<ul style="list-style-type: none">• nothing on survivor benefits• easing of the CPP/RRQ disability provisions (requirement would decrease with age)	<ul style="list-style-type: none">• survivor benefits should be 60% of the deceased's pension	<ul style="list-style-type: none">• survivor benefits of 60% of the deceased's pension (should continue upon remarriage)• increase the disability benefits to the OAS level
Inclusion of Homemakers in CPP/RRQ	<ul style="list-style-type: none">• not discussed	<ul style="list-style-type: none">• no recommendation	<ul style="list-style-type: none">• opposed to it	<ul style="list-style-type: none">• no recommendation

TABLE 6-6 (cont'd.)

	Québec, Cofirentes + (1977)	Economic Council of Canada (1979)	Ontario (1981)	Canada, House of Commons (1982)
Credit-splitting upon Divorce or When Younger Spouse Reaches 65	<ul style="list-style-type: none"> • not discussed 	<ul style="list-style-type: none"> • no recommendation 	<ul style="list-style-type: none"> • in favour on dissolution of marriage, but not when the younger spouse reaches 65 	<ul style="list-style-type: none"> • in favour of it
Inflation-indexing	<ul style="list-style-type: none"> • income on fund coming from the presence of inflation should be used to index benefits 	<ul style="list-style-type: none"> • govt. should sell indexed annuities to RRSP owners & private plans 	<ul style="list-style-type: none"> • use of a refundable inflation tax credit (replacing the actual age & pension exemptions) 	<ul style="list-style-type: none"> • inflation adjustment by the excess interest approach (long-term yield on govt. bonds - 3.5%)
Vesting	<ul style="list-style-type: none"> • age + years of membership equal or greater than 35 years 	<ul style="list-style-type: none"> • 5 years gradual vesting at 20% a year 	<ul style="list-style-type: none"> • 10 years with one employer or 10 years' membership in a given pension plan 	<ul style="list-style-type: none"> • 2 years, with employer paying at least half of the accrued benefits
Survivor Benefits	<ul style="list-style-type: none"> • not discussed 	<ul style="list-style-type: none"> • no recommendation 	<ul style="list-style-type: none"> • payment of pensions on a joint and last survivor basis (60% to the survivor) 	<ul style="list-style-type: none"> • payment of retirement pensions on a joint and last survivor basis (60% to the survivor) • no termination of benefits upon remarriage

Source: See text.

Note: These reports were chosen because they are the most comprehensive. Several other provincial governments besides Ontario and Quebec have published their position on specific aspects of pension reform (Nova Scotia, Manitoba, British Columbia, Alberta). The Lazear Report (Canada, House of Commons, 1980) is not presented here because it sets out four different options for reform, and so does not present a reform package as such.

a. YMPE = yearly maximum pensionable earnings.

b. AIW = average industrial wage.

Several other groups (unions, business associations, and so on) have made proposals to change the pension system. However, their recommendations are not reviewed here.

More radical proposals have also been made to improve the Canadian pension system by moving toward more selectivity for the OAS and even the CPP. Several authors have studied the consequences of such a move. Bird (1976), Québec, Cofirentes + (1977), and the Ontario Royal Commission on the Status of Pensions in Ontario (1981) favour different degrees of increased selectivity despite the alleged drawbacks of selectivity in administrative costs, psychological stigma, disincentive effects, and so on. Mendelson (1981) and Garfinkel (1982) discard the idea of more selectivity of supplementary programs for different reasons. Mendelson believes that a selective program works only if it complements a universal one for administrative reasons. Garfinkel believes that elderly individuals are more sensitive to stigma than others and that supplementary cash programs should not be income-tested for administrative simplicity.

Evaluation

Two factors were crucial catalysts in the debate over pensions. The first one is the situation of elderly single women with incomes below the poverty line, however measured. The second one is the concern that, in view of the demographic situation in which Canadians will probably be living 25 years from now, inter-generational transfers will become increasingly necessary in order to maintain the present level of retirement benefits. Some changes could be made quite easily to help solve at least these two problems.

The purpose of the public pension system is twofold. First, it is a mechanism through which individuals can get a basic pension (through OAS). Second, it is a safety net for those in need (through GIS). The CPP and RRQ are supplementary pension plans designed for those who work. Thus, the inclusion of homemakers in those plans would discriminate against other individuals who are outside the official labour market, such as students or unemployed persons. Moreover, it would not help women already aged 65 years or more or those close to retirement. The government should continue to index both the OAS and GIS benefits, and should include a further real increase in GIS to direct additional moneys to those in need. OAS should remain universal, however, since it is an implicit contract between the government and the population. Expansion of the CPP would not make sense now. It is far more urgent to solve its financial problems. Provinces should be asked to refund the money they owe to the fund even though provincial taxes would probably have to be raised to do so, because from an ethical point of view they should reimburse what they have borrowed. The CPP should then move to a partially funded basis with enough reserves to cover expenses over a "logical" time span. The fund

should try to avoid being in deficit and, if it is, this fact should be made clear. This is the only way to ensure that the generation retiring in about 2020 will have a strong right to claim pensions from the CPP. In general, beneficiaries should pay for what they will get, and it must be clear that the benefits they obtain really belong to them. Pensions should be fully funded, including those provided by public employers. Therefore, the CPP and RRQ should not be vehicles to redistribute income; instead, they should be savings plans. There are other programs to carry out this redistributive purpose.

Employer-sponsored pension plans should not be made compulsory and their characteristics should be negotiated between employers and their employees. These plans are part of the compensation system and should be treated as such. However, information disclosure should be encouraged to ensure that decisions are taken as rationally as possible.

The main issue that needs to be settled before choosing the preferred reform options is philosophical. In fact, it depends on what is seen as the proper role of government in this area and what is seen as the role of the private sector. Once it is determined whether the role of public pension plans is to provide adequate replacement income or to provide a safety net in order to prevent poverty, an appropriate mix of public and private intervention can be designed to attain the chosen goal. However, first more information is needed on the nature of pension plans, on their impact on individual decision making, and on the macroeconomic situation of the country. Despite the huge number of studies already published on these topics, more work is required to enlarge our knowledge of this field and to unify all the disparate findings.

Notes

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1. The reader interested in the history of public pension plans in Canada is referred to Bryden (1974).
2. In this case, the provincial supplement considered is the one provided by the Ontario government. Supplementary benefits for low income senior Ontario residents provide a pension of \$48.88 a month for single people and \$159.62 for married couples. Payments are reduced by \$1 for every \$2 of non-transfer income up to the threshold income levels of \$98 a month for single people and \$319 for couples.
3. Canada, House of Commons (1984a), addresses the issue of equality of access to tax assistance for retirement savings. The authors recommend an increase in the limit on tax deductible contributions to retirement savings plans (which limit would include both employee and employer contributions), a provision for the carry-forward of unused tax deduction entitlement from earlier years, and the creation of a new savings vehicle, the Registered Pension Account, to help small business owners in providing their employees with adequate pensions.

4. Family wealth is defined as the value of total asset holdings less total debt. Total asset holdings include liquid assets such as deposits and bonds, publicly traded stocks, shares in mutual funds, market value of car, house, and other real estate, and equity in business. Total debt, on the other hand, includes amounts owing on charge accounts, bank and other institutional loans, and mortgage outstanding on the home and other real estate. Asset holdings exclude accrued claims against retirement pension funds or insurance companies.
5. Defined as including OAS, GIS, Spouse's Allowance, CPP/RRQ, and private pension rights.

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Health Care Costs in Canada: Past and Future Trends

GILLES GRENIER

The better off a society becomes economically, the higher priority its members tend to attach to the health of that society. Clearly, a major consequence of the economic growth that has occurred over the past several decades in Canada and other Western countries has been an increased demand for health services. Wealthier societies also expect their governments to provide more economic equality. One aspect of this expectation is the demand that all individuals be entitled to receive a certain minimum of health care. Certainly the health services sector in Canada and elsewhere has seen increased government involvement aimed at providing equal access.

Along with these factors altering the demand side of the health services sector have appeared changes affecting the supply side. Rapid advances in medical technology and the resultant complexity of the services rendered have had a significant impact on costs. Because of the complex technology, consumers are often unsure about their medical needs and have to rely on health professionals to determine the kind of service they need. As a result, the health services sector is characterized by the fact that the providers of services have some control on both supply and demand. These considerations have also led to government intervention in the health care field. This ever-increasing government involvement has raised some concern for the future, especially because the gradual aging of the Canadian population will have significant consequences on the demand for health services.

This study examines the status of the Canadian health care sector by analyzing past and possible future trends. The first section assesses past trends in the growth of the health services sector in Canada and elsewhere by comparing the proportions of the gross national product (GNP) and

total public expenditure devoted to health expenditures. The second section evaluates the distributional impact of past government intervention in health by looking at the results of several studies. The third section presents some estimates of the impact of aging on future government-insured health expenditures. Policy issues related to future trends in health expenditures are discussed in the fourth section. A summary of the major findings concludes the analysis.

Past Trends in the Allocation of Health Care Resources

The evolution of the Canadian health care services sector is characterized by a gradual shift from personal and private to collective and governmental responsibility for the allocation of resources. The milestones marking the path of government intervention in health are summarized in Table 7-1.¹

TABLE 7-1 Government Intervention in Health Care in Canada

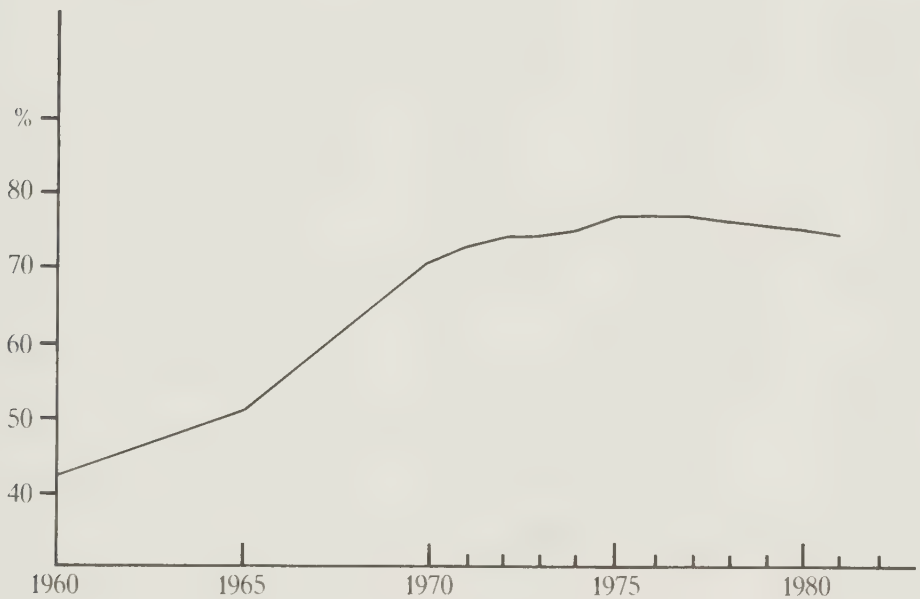
1915	First public health insurance plan in the rural municipality of Sarnia in Saskatchewan.
1940	Rowell-Sirois Commission proposes an advisory board on health.
1945-46	Federal government and provinces fail to agree on national health insurance at two federal-provincial conferences.
1946	Pilot program for comprehensive health insurance in the Swift Current Health Region in Saskatchewan.
1947	Saskatchewan Hospitalization Act is the first universal hospital insurance program in Canada.
1948	Federal government implements the National Health Program.
1957	Hospital Insurance and Diagnostic Act introduces federal participation in hospital insurance.
1961	Appointment of the Royal Commission on Health Services.
1962	Saskatchewan Medical Care Act is the first universal medical care insurance program in Canada.
1964	Royal Commission on Health Services recommends the Health Charter for Canadians.
1966	Medical Care Act introduces federal participation in medical care insurance.
1977	Federal-Provincial Fiscal Arrangement and Established Programs Financing Act revises cost-sharing system.
1984	Canada Health Act reduces federal contributions to provinces that use extra-billing and user charges.

These events culminated in the establishment of public hospital and medical care insurance programs. The Hospital Insurance and Diagnostic Service

Act of 1957 provided for public hospital insurance at the national level, and by 1961 all the provinces had joined the program. In 1964, the Royal Commission on Health Services proposed a health charter for Canada, which contained the basic principles of Canada's health insurance program: universality, accessibility, comprehensiveness, portability and public administration. These principles were implemented in the Medical Care Act of 1966, which provided for a national medical care insurance program in Canada.

The introduction of the hospital and medical care insurance programs increased substantially the role of governments in the health care services sector. This is evident in Figure 7-1, which shows that the share of governments in total health expenditures rose from 43 percent in 1961 to 70 percent in 1972.² After the programs had been implemented, this share stabilized at about 75 percent.

FIGURE 7-1 Public Sector Share of Total Health Expenditures, Canada, 1960-81



Source: Canada, Department of National Health and Welfare, Health Economics and Statistics Division, preliminary unpublished figures.

Note: Public sector includes the federal, provincial and local levels.

The impact of government intervention in health care is also revealed in Table 7-2, which lists the proportion of the GNP devoted to health expenditures each year from 1960 to 1982. This measure provides the best indicator of the importance of health expenditures relative to the economy's ability to pay them. Between 1960 and 1970, the share of the GNP attributed to health costs rose sharply from 5.6 to 7.3 percent, partly as a result of the implementation of the hospital and medical care insurance

TABLE 7-2 Health Expenditures as a Percentage of GNP, Canada, 1960-1982

	1960	1965	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981 ^a	1982 ^a
Total Health Expenditures	5.62	6.07	7.30	7.54	7.40	7.06	6.95	7.49	7.38	7.39	7.36	7.21	7.48	7.60	8.44
Personal Health Care	4.62	5.11	6.36	6.47	6.51	6.21	6.10	6.61	6.52	6.52	6.49	6.37	6.53	6.65	7.41
Institutions	2.47	2.90	3.81	3.88	3.86	3.73	3.79	4.20	4.17	4.13	4.09	3.99	4.11	4.20	4.65
Hospitals ^b	2.18	2.59	3.29	3.33	3.28	3.15	3.18	3.51	3.42	3.30	3.23	3.12	3.20	3.16	3.50
Homes for Special Care	0.29	0.31	0.52	0.55	0.58	0.58	0.61	0.69	0.75	0.83	0.86	0.87	0.91	1.04	1.15
Professional Services	1.34	1.39	1.65	1.77	1.77	1.65	1.55	1.63	1.57	1.60	1.61	1.60	1.65	1.66	1.84
Physicians	0.93	0.98	1.21	1.32	1.32	1.20	1.12	1.16	1.10	1.10	1.10	1.08	1.11	1.10	1.24
Dentists	0.29	0.29	0.31	0.33	0.33	0.34	0.33	0.36	0.36	0.39	0.41	0.42	0.43	0.44	0.47
Others ^c	0.13	0.11	0.11	0.11	0.11	0.12	0.10	0.11	0.11	0.10	0.10	0.11	0.12	0.12	0.14
Drugs and Appliances ^d	0.81	0.82	0.91	0.92	0.88	0.83	0.76	0.79	0.78	0.80	0.79	0.78	0.76	0.79	0.92
Other Health Costs	1.00	0.96	0.94	0.97	0.89	0.85	0.85	0.88	0.86	0.87	0.87	0.85	0.95	0.95	1.08
Prepayment and Administration	0.15	0.16	0.12	0.13	0.13	0.12	0.12	0.13	0.11	0.12	0.11	0.10	0.10	0.12	0.12
Public Health	0.22	0.19	0.23	0.23	0.22	0.20	0.19	0.22	0.25	0.26	0.26	0.26	0.26	0.26	0.27
Capital Expenditures	0.51	0.46	0.43	0.44	0.38	0.37	0.38	0.37	0.34	0.32	0.33	0.31	0.41	0.39	0.44
Health Research	0.03	0.06	0.08	0.08	0.09	0.08	0.08	0.08	0.07	0.08	0.08	0.08	0.08	0.09	0.09
Miscellaneous Health Costs	0.09	0.10	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10

Source: Canada, Department of National Health and Welfare, Health Economics and Statistics Division, preliminary unpublished figures.

- a. Provisional.
- b. Includes general and allied special hospitals, mental hospitals, tuberculosis hospitals, and federal hospitals.
- c. Includes chiropractors, optometrists, podiatrists, osteopaths, nurses, and physiotherapists.
- d. Includes prescribed and non-prescribed drugs, eyeglasses, hearing aids, health appliances and other prostheses.

programs. But perhaps the most remarkable finding of this table is that the share remained relatively stable at the latter level throughout the 1970s. Although concern has been frequently expressed about the high and rising costs of health services in Canada, these costs did not increase faster than the productive capacity of the economy over the decade. Since 1980, the slow upward trend has begun again, but it is too early to see whether this is a new trend or a result of the recent recession. Given the relative incompressibility of health expenditures, the proportion increases when economic activity declines, and returns to its normal level with the economic recovery.

Table 7-2 also reveals that the stability of health care costs can be attributed to professional services (mainly physicians) and to drugs and appliances, whose share in the GNP declined between 1970 and 1980. By contrast, the share of institutional care expenditures in the GNP rose during that period because of the increase in institutions offering special care, mainly for the aged.

The evolution of relative expenditures on physicians' services can be analyzed further (Table 7-3). The number of self-employed physicians increased markedly between the mid-1960s and the mid-1970s and remained relatively stable thereafter. This pattern may be attributed, at least in part, to the increase in demand that immediately followed the introduction of the medical care insurance program but levelled off after some time.³ The last two lines of Table 7-3 also show that the average net income of physicians, after increasing faster than the Consumer Price Index (CPI) during the 1960s,⁴ decreased in real terms during the 1970s, explaining the drop in expenditures for physicians' services relative to the GNP. The decline in net income may result from the hard bargaining that took place when governments and physicians were negotiating fees during the years that followed the introduction of medical care insurance.

These figures may give some weight to the argument that physicians have been treated unfairly. However, physicians' average net income increased faster than the Consumer Price Index between 1961 and 1980. Furthermore, as Table 7-4 indicates quite clearly, physicians still enjoy very high incomes relative to other professionals.⁵

Another dimension of the evolution of government involvement in health is the share of health in total public expenditures. Figure 7-2 shows a pattern very similar to what has already been observed: the share of health in the total expenditures of all three levels of government rose from 10 percent in 1965 to 15 percent in 1971, but stabilized thereafter at a level of about 13 percent.

Canada's success in controlling the growth of health care costs can be appreciated more clearly when it is compared with that of the United States (see Figure 7-3). While in the early 1960s the share of health in GNP was lower in the United States than in Canada, the situation reversed itself completely in the 1970s. The proportion grew from 7.5 percent in 1970

TABLE 7-3 Physician Self-Employment and Net Income, Canada, 1961-80

	1961	1966	1971	1976	1977	1978	1979	1980
Number of Self-Employed Physicians as Reported in Taxation Statistics ^a								
Index (1971 = 100)	14,588	15,361	20,742	27,395	26,586	26,819	27,419	28,739
	70.3	74.1	100.0	132.1	128.2	129.3	132.2	138.6
Number of Self-Employed Physicians per 100,000 population	80.0	76.7	96.2	119.1	114.2	114.0	115.4	119.4
Average Net Income of Physicians (\$)	17,006	24,993	39,555	49,310	51,718	54,668	58,393	63,411
Index (1971 = 100)	43.6	63.2	100.0	124.7	130.7	138.2	147.6	160.3
Consumer Price Index (1971 = 100)	74.9	83.5	100.0	148.9	160.8	175.1	191.2	210.6

Source: Canada, Department of National Health and Welfare, Health Information Division, *Earnings of physicians in Canada*, 1983 (based on *Taxation Statistics*, Department of National Revenue).

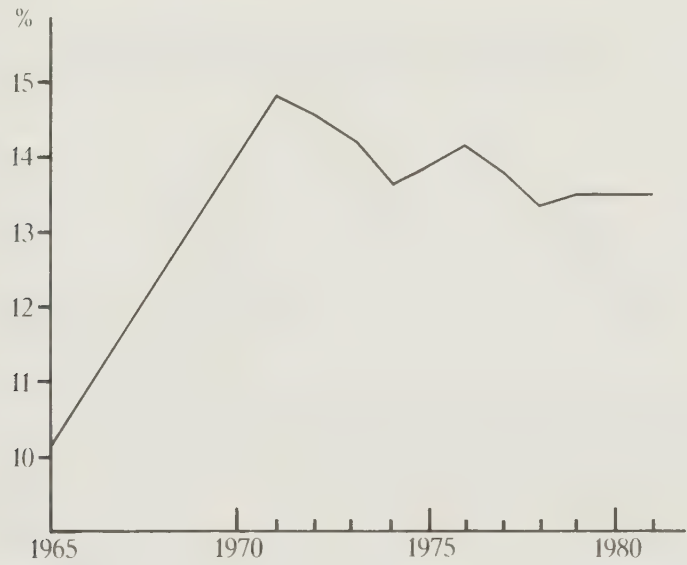
a. The figures in the table come from taxation statistics and include only self-employed physicians. There are obviously some problems with that source of data; however, it is the only one providing statistics on income. Another source of data on the number of physicians is the *Canada Health Manpower Inventory* (Canada, Department of National Health and Welfare, 1983). The pattern of change in the number of physicians does not appear as strongly as shown in the table when the latter source is used. The total number of active civilian physicians, including interns and residents, is: 1968 = 28,209; 1971 = 32,942; 1976 = 40,130; 1977 = 41,398; 1978 = 42,238; 1979 = 43,192; 1980 = 44,275.

**TABLE 7-4 Net Incomes of Self-Employed Professionals,
Canada, 1980**

	Average net income
	(\$)
Physicians	63,411
Lawyers and Notaries	49,481
Dentists	56,977
Accountants	43,799
Engineers and Architects	41,052

Source: Canada, Department of National Health and Welfare, Health Information Division, *Earnings of physicians in Canada, 1983* (based on *Taxation Statistics*, Department of National Revenue).

FIGURE 7-2 Health Expenditures as a Share of Total Government Expenditures, Canada, 1965-81



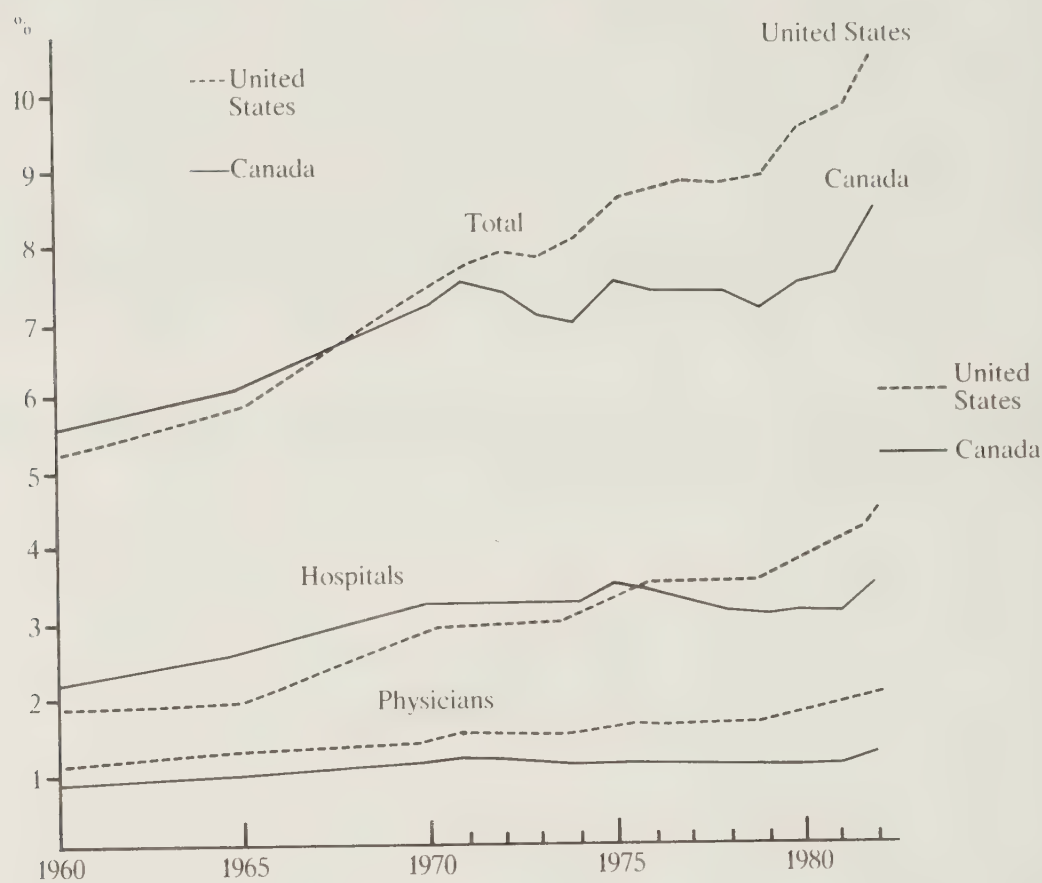
Sources: Canada, Department of National Health and Welfare, Health Economics and Statistics Division, preliminary unpublished figures; Statistics Canada, National Income and Expenditures Accounts.

Note: Government expenditures include federal, provincial and local costs.

to 9.5 percent in 1980 in the United States while remaining stable in Canada. The Canadian share of hospital expenditures in the GNP, which used to exceed the U.S. level, has dropped further and further below the U.S. figure since 1976. Expenditures on physicians' services relative to GNP are also consistently lower in Canada than in the United States.

Figure 7-4 points to similar conclusions: in constant dollars, using the Consumer Price Index in each country as deflator, per capita health expenditures in the United States have constantly been higher than those in Canada by quite a large margin, although the two countries experienced similar growth rates.⁶

FIGURE 7-3 Total Health, Hospital and Physician Expenditures
Relative to GNP in Canada and the United States,
1960-82



Source: Canada, Department of National Health and Welfare, Health Economics and Statistics Division, preliminary unpublished figures.

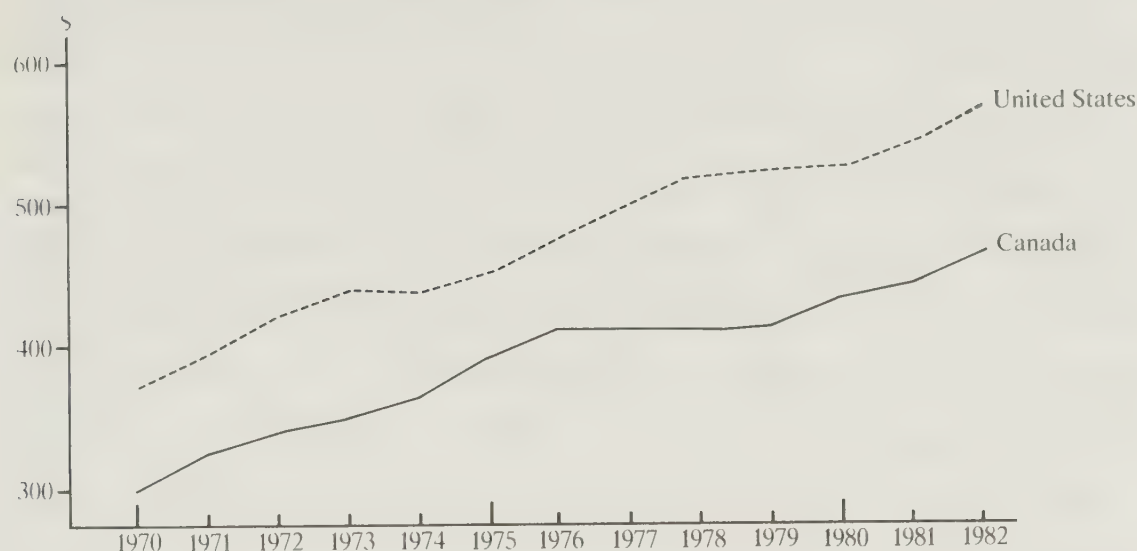
Finally, although international comparisons are always difficult to make because of differences in measurement methods and varying demographic needs, Table 7-5 indicates that Canada spends a smaller proportion of its GNP on health than do the majority of other developed countries.

TABLE 7-5 Health Expenditures as a Share of GNP,
in Selected Countries, 1975

Country	Percentage
Germany	9.7
Sweden	8.7
Netherlands	8.6
United States	8.4
France	8.1
Canada	7.1
Australia	7.0
Finland	6.8
United Kingdom	5.6

Source: J.G. Simanis, and J.R. Coleman, "Health Care Expenditures in Nine Industrialized Countries, 1960-76," *Social Security Bulletin* 43 (1) (1980): 3.

FIGURE 7-4 Per Capita Total Health Expenditures Deflated by CPI in Canada and the United States, 1970-82



Sources: Canada, Department of National Health and Welfare, Health Economics and Statistics Division, preliminary unpublished figures; Statistics Canada, Consumer Price Index; U.S., Department of Labor.

Note: Values are given in constant 1971 dollars.

In 1971, the average value of \$1.00 U.S. was \$1.01 Canadian.

In conclusion, this brief survey suggests that Canadian performance in controlling the growth of health care costs has been relatively good and compares favourably with that of other countries. These comparisons, however, consider only the inputs into the health services sector and ignore the output of the process: maintaining people in good health. As is well known (see Fuchs, 1975), there is no link between the resources devoted to health services and the level of health of the population. The cost comparisons made in this section were based on the implicit assumption that the quality of health services is comparable across countries.

Distributional Aspects of Government Intervention in Health

To assess the impact of government intervention in health, it is important to look not only at total expenditures, but also at the distribution of services rendered by the medical care and hospital insurance programs among different population groups. Since the major purpose of these programs was to make health care more accessible to everyone, regardless of income, their success or failure must be evaluated against that goal. It is also important, when considering policies aimed at reducing costs, to consider their impact on the redistribution of wealth and income.

This section presents a survey of studies that have evaluated the use that different income groups have made of the services covered by health insurance programs. Most of these studies do not consider the total impact

of all programs; they are usually limited to analysis of the use of particular services in a given province at a given time or during a given period. Although they also differ in their methodology and findings, the studies nevertheless provide good indications of the general effects of government intervention.

One of the earliest studies was done by Beck (1973), who looked at the use of medical care in Saskatchewan between 1963 and 1968 (universal medical care insurance was established in that province in 1962). The analysis was done with annual records from about 40,000 family units. A related study with the same data base was also done by Beck and Horne (1976). The studies indicate that low income families used fewer medical services during the years considered and that the services used were, on average, less expensive than those used by higher income families. However, over the period, low income families increased their use of medical services while usage by higher income families remained at about the same level. It appears that the introduction of universal medical care insurance in Saskatchewan, although not eliminating disparities in access to services, contributed at least to their reduction.

Studies that analyzed the case of Quebec also indicate that universal medical insurance contributed to making services more accessible to the poor. However, they sometimes show that the poor actually used more services than the rich, contrary to what was found in Saskatchewan. Enterline et al. (1973) and McDonald et al. (1974) examined the patterns of utilization of medical services in 1969 and 1972: two years before and two years after the introduction of universal medical care insurance in Quebec. Using a sample of about 5,800 metropolitan Montreal households, they found that the number of visits per capita remained approximately constant during the period, but that the poor increased their number of visits, while utilization by the rich declined. Another finding was that the number of visits for the same symptoms was similar for all income groups; thus the greater use by the poor can be attributed to greater need.

The results of another study are reported in Siemiatycki, Richardson and Pless (1980) and in Siemiatycki and Richardson (1980). The sample contained about 1,400 households surveyed in 1974 in an area of metropolitan Montreal. The results indicated that no important differences existed between economic classes in the rates of visits to physicians, but that the kinds of visits differed. The poor used more hospital clinic and emergency room services than the wealthy, and more of their visits to physicians led to drug prescriptions and physician-initiated requests to return, which suggests that the poor may wait longer than the rich before consulting a physician. This study also found that the average use of medical services by all income groups increased significantly after the implementation of universal health insurance. However, the authors concluded that if the introduction of medical care insurance led to abuse, it occurred equally among all income levels.

Other results pertaining to Quebec, but using a different data base, are reported in Wan and Broida (1981). They used data from 65 Quebec medical market areas constructed by Mathematica Policy Research (1980) in a large-scale study of physicians' responses to universal medical care insurance between 1972 and 1975. Wan and Broida's research was conducted with a sample of beneficiaries of specific age and sex groups living in those areas. The study analyzed the incidence of different kinds of visits using regression analysis, with explanatory variables related to area and personal characteristics. The results indicated that, for most of the groups analyzed, low economic status (approximated by an indicator of welfare status) leads to more visits to physicians.

In a study of the distributional aspects of medical care in Ontario, Manga (1978) examined the use of physicians' services during a one-year period beginning in April 1974. His sample, consisting of about 1,300 family units, was constructed using files from the Ontario Health Insurance Plan complemented by a household survey of socio-economic and demographic characteristics, such as income, age and education of head, family size and composition, access to care, and travel and waiting time. Contrary to what was found in Quebec, however, Manga's results indicated a positive relationship between use of physicians' services and income. They also suggested that the differences can be partly attributed to differences in socio-economic and demographic variables, in particular age and sex composition of the family. Another finding was that the poor tend to receive a greater proportion of physicians' services in hospitals.

Barer et al. (1982) extended Manga's research by using the same data base to analyze the use of Ontario hospital services by income classes. They found that low income families used significantly more hospital services than high income families, contrary to the usage of physicians' services. The per capita number of admissions was similar for all income groups, but patients from low income groups tended to spend a longer time in the hospital. This is attributed to the fact that more lower income families are headed by persons age 65 or over. After they used regression analysis to control for socio-economic and demographic factors, the authors found again that admission to hospital was not influenced by income, and that length of stay was longer for those admitted from low income families, although the disparity was less marked.

The last three studies in this survey of the literature concern Canada as a whole and include services from both hospital and medical care insurance programs. In 1975, Statistics Canada added a supplementary questionnaire to its annual survey of consumer finances, asking 12,500 families about their 1974 use of health services covered by hospital and medical care insurance programs, and published the results in a Statistics Canada (1977) report. The study's major finding is that low income groups used slightly more medical care services and significantly more hospital services than high income groups.

Boulet and Henderson (1979) used the same data base and reached basically the same conclusions. The authors observed that the poor in all age groups used more insurance-covered services. They considered the possibility that the higher use by the poor is due to the lower opportunity costs of consuming health services, but rejected that explanation and concluded that the poor had greater need.

Boulet and Henderson also analyzed the total redistributive impact of the medical care and hospital insurance programs by looking at their financing from premiums and personal income taxes. Their major conclusion was that the programs have a progressive impact on income redistribution, especially when they are financed through income taxes, since low income people use more services and pay less taxes. The authors suggested that the programs can be made more progressive if all provinces abolish premiums in favour of income tax financing.

The data base for another national study was the 1978–79 Canada Health Survey, which examined the relationships between the health and other characteristics of the population. It included questions on incomes and other socio-demographic characteristics, as well as on the use of different kinds of health services. The survey data enabled the researchers to analyze two aspects of the use of hospital and of physicians' services, controlling for the effects of several factors: first, whether a person used a particular kind of service; and second, how much of the service was used. The results of the study were reported in Manga et al. (1983), for both hospital and physicians' services, and in Broyles et al. (1983) for physicians' services only. Their major conclusion was that the use of both kinds of services was determined mainly by medical need; income had no effect on usage. However, among those persons who used the services, low income groups required more care than high income groups. This result is similar to the findings of Barer et al. (1982) in their study of hospital services in Ontario and is consistent with those of the other studies for Canada.

The major findings of the studies reviewed in this section are summarized in Table 7-6. They lead to the general conclusion that the introduction of universal hospital and medical care insurance in Canada, by removing the financial barriers to access to health care, has allowed low income people to receive a larger share of services.

In the case of physicians' services, the evidence is mixed: it appears that low income groups use more services in Quebec, but not in Saskatchewan and Ontario. However, comparison of the studies is difficult, because of differences in methodologies, kinds of services covered, time periods, locations, sample sizes, and so on. In any event, no study found that the introduction of the health insurance programs was detrimental to the poor and all indications are that the programs were helpful.

In the case of hospital services, the evidence is quite strong that the poor use more services than the wealthy. Since hospital services account for a larger share of total health expenditures than do physicians' services,

TABLE 7-6 Estimated Distributional Impact of Health Insurance, Summary of Canadian Studies

Study	Geographical Area	Years	Type of Service	Major Findings
Beck (1973) Beck and Horne (1976)	Saskatchewan	1963-68	Medical care	Low income groups used fewer services. However, over the period, low income groups increased their use relative to high income groups.
Enterline et al. (1973) McDonald et al. (1974)	Montreal metropolitan area	1969-72	Medical care	Low income groups increased their use after medical care insurance, while high income groups decreased theirs.
Siemiatycki, Richardson and Pless (1980) Siemiatycki and Richardson (1980)	Montreal metropolitan area	1974	Medical care	No significant difference in use between low and high income groups.
Wan and Broida (1981)	Quebec	1972-75	Medical care	Low economic status leads to more use.
Manga (1978)	Ontario	1974	Medical care	Low income groups used fewer services.
Barer et al. (1982)	Ontario	1974	Hospital services	Low income groups used more services.
Statistics Canada (1977) Boulet and Henderson (1979)	Canada	1974	Medical care and hospital services	Low income groups used slightly more medical services and significantly more hospital services than high income groups.
Manga et al. (1983) Broyles et al. (1983)	Canada	1978-79	Medical care and hospital services	Use of services is not affected by income. But, among those who used the services, low income groups tended to use more.

it appears that health insurance has a progressive effect on income distribution. However, the evidence that income groups may use different kinds of health services in different proportions suggests that the poor may wait longer than the rich before receiving necessary medical care; thus there may still be some inequalities in access.

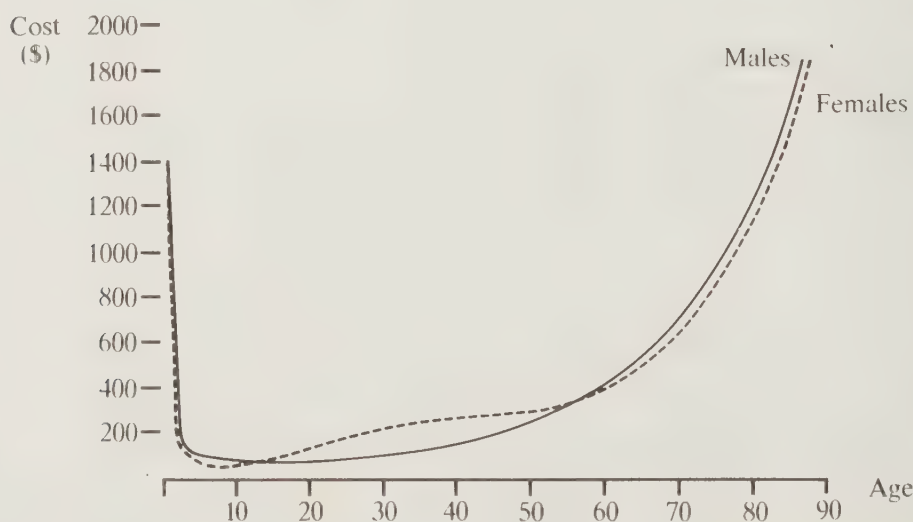
Many would consider the progressive distributive impact of health insurance to be a mark of the success of government intervention in health care. The impact on redistribution should be considered in any attempt to reduce costs, especially plans that would increase direct costs to patients, since the poor are the most affected by those costs.⁷

Future Trends in Health Care Costs: The Impact of Aging

Significant among the factors that will have an important influence on future health care costs in Canada is the aging of the Canadian population because of past and expected future trends in fertility and, to a lesser extent, changes in mortality. Since old people need many more health care services than young people, this demographic change could vastly increase the resources that must be devoted to such services.

The relationship between age and health care costs can be seen quite clearly by looking at Figure 7-5, which presents the costs of government-insured health services by age for men and women as estimated by Boulet and Grenier (1978).⁸ Costs are high in infancy but low during childhood; they then start growing with age, first slowly, but at a rate that increases

FIGURE 7-5 Per Capita Cost of Government-Insured Health Services, Canada, 1974



Source: J.-A. Boulet and G. Grenier, "Health Expenditures in Canada and the Impact of Demographic Changes on Future Government Health Insurance Program Expenditures," Discussion Paper 123 (Ottawa: Economic Council of Canada, 1978), p. 49.

Source: Boulet and Grenier (1978), page 49.

with age, reaching very high levels for the oldest age groups. Costs are higher for men than for women when young and old, but the situation is reversed in middle age. The figures presented in Figure 7-5 for women of childbearing age do not include the costs related to pregnancy; if they were included, the male-female disparity would be much greater. Because these costs are related to the number of births and not to the number of women in these age groups (to the extent that fertility is not constant), they are attributed to the age group of one year and under for the purpose of projecting future health costs.

The future changes in costs of health care services attributable to changes in the age structure of the population can be estimated from the data in Figure 7-5 by using them in conjunction with demographic projections. Several authors have applied a procedure of this kind to project costs of different kinds of health services for different time periods (up to the year 2051) and various demographic scenarios (Boulet and Grenier, 1978; Denton and Spencer, 1975, 1983; Lefebvre, Zsigmond and Devereaux, 1979; Gross and Schwenger, 1981; Camirand, 1983; and Woods Gordon Management Consultants, 1984). The rest of this section presents an update of the application of this procedure for the period 1981–2006 with the latest demographic projections recently made available by Statistics Canada (1984). The methodology used is otherwise the same as that employed by Boulet and Grenier (1978) and includes the data in Figure 7-5.⁹ The new projections indicate that the fertility rates might be lower than those postulated in earlier demographic projections. For instance, in 1981, the total fertility rate (the total number of children on average per woman in her childbearing years) was 1.7, while projections based on the 1971 census used the figures of 1.8 and 2.2 for the low and high fertility scenarios, respectively. As a consequence of this decline, relative future aging of the population might be more important than expected, even though the total number of old people will not be affected for a long time.

Two basic demographic scenarios are used for this analysis. They are constructed from the Statistics Canada projections by making specific assumptions about the components of demographic change: fertility, migration and mortality. Two extreme assumptions are made about the unpredictable nature of fertility. From the 1981 level of 1.7, the low fertility scenario assumes that it will go down gradually, reaching 1.4 in 1996 and remaining the same thereafter. The high fertility scenario, on the contrary, assumes that fertility will rise to 2.2 in 1996 and continue at that level. Two basic migration trends are also assumed. In the low immigration scenario, it is assumed that net international immigration will be 50,000 persons per year for all the years of the projections, with the exception of the first few years, where a gradual change from current levels to 50,000 is assumed. In the high immigration scenario, it is assumed that net international immigration will increase gradually from its current levels, reaching 100,000 persons per year in 1994 and remaining the same there-

TABLE 7-7 Demographic Projections, Canada, 1981-2006

	1981	1986	1991	1996	2001	2006
Low Demographic Growth^a						
Total Population (thousands)	24,330	25,583	26,613	27,350	27,816	28,089
Age group (%)						
0-14	22.5	21.2	20.2	18.7	16.7	14.9
15-64	67.9	68.1	67.9	68.2	69.3	70.4
65 +	9.6	10.7	11.9	13.1	14.0	14.7
High Demographic Growth^b						
Total Population (thousands)	24,330	25,625	27,056	28,695	30,260	31,639
Age group (%)						
0-14	22.5	21.3	21.2	21.6	21.7	21.2
15-64	67.9	68.1	67.1	66.0	65.5	65.8
65 +	9.6	10.6	11.7	12.4	12.8	13.0

Source: Statistics Canada, *Population Projections for Canada, Provinces and Territories, 1981-2006*, catalogue no. 91-520, Population Projections Section, Demography Division, 1984.

a. Total Fertility Rate = 1.4 in 1996, net international immigration = 50,000.

b. Total Fertility Rate = 2.2 in 1996, net international immigration = 100,000 in 1994.

after. Finally, with respect to mortality, whose fluctuations are less than those of fertility and migration, only one assumption is made for all the demographic projections. Life expectation at birth, which in 1981 was 71.9 years for men and 78.9 years for women, is assumed to reach 74.9 years and 81.5 years in 1996 and remain at those levels.¹⁰

The two basic demographic scenarios used are constructed by combining the low fertility and migration assumptions on the one hand and the high fertility and migration assumptions on the other. Table 7-7 presents total population and distribution by major age groups during the period 1981–2006 under both scenarios. From 24.3 million persons in 1981, total population is expected to reach 28.1 million persons in 2006 in the low demographic growth scenario and 31.6 million persons in the high demographic growth scenario. The importance of aging can be seen by looking at the proportion of the population that will be age 65 or over. In both demographic scenarios, this proportion is expected to increase substantially. From 9.6 percent in 1981, it would reach 14.7 percent under the low demographic growth scenario and 13.0 percent according to the high demographic growth scenario.

The impact of these changes on the costs of government-insured health services can be appreciated by examining Table 7-8. This table presents the results of the projections in terms of average annual growth rates of the total population, per capita expenditures for physicians' and hospital services and total expenditures for physicians' and hospital services. Since total expenditures are equal to total population times per capita expenditures, the growth rate of total expenditures is equal to the growth rate of the total population plus the growth rate of per capita expenditures.¹¹

The growth rate of total health expenditures can thus be broken down into two components: one due to population change, and the other due to the change in the age structure of that population. In the low demographic growth scenario, total expenditures on both physicians' and hospital services will increase between 1981 and 2006 at an average annual rate of 1.48 percent (in constant dollars). Of that increase, 0.57 percentage points will result from total population growth and 0.90 percentage points will be because of the aging of the population. In the high demographic growth scenario, total expenditures will increase between 1981 and 2006 at an average annual rate of 1.73 percent, divided into components of 1.05 percentage points and 0.67 percentage points. The relative importance of the two components of growth is reversed under the two demographic scenarios. Table 7-8 also reveals that the impact of aging will be felt much more strongly on the use of hospital services than on those of physicians. For both demographic projections, the per capita growth of hospital expenditures is more than twice the per capita growth of physicians' expenditures for all the periods under consideration.

Finally, it is interesting to note that the effect of the age structure on the growth of total expenditures is quite large in the near future (up to

TABLE 7-7 Demographic Projections, Canada, 1981-2006

	1981	1986	1991	1996	2001	2006
Low Demographic Growth^a						
Total Population (thousands)	24,330	25,583	26,613	27,350	27,816	28,089
Age group (%)						
0-14	22.5	21.2	20.2	18.7	16.7	14.9
15-64	67.9	68.1	67.9	68.2	69.3	70.4
65 +	9.6	10.7	11.9	13.1	14.0	14.7
High Demographic Growth^b						
Total Population (thousands)	24,330	25,625	27,056	28,695	30,260	31,639
Age group (%)						
0-14	22.5	21.3	21.2	21.6	21.7	21.2
15-64	67.9	68.1	67.1	66.0	65.5	65.8
65 +	9.6	10.6	11.7	12.4	12.8	13.0

Source: Statistics Canada, *Population Projections for Canada, Provinces and Territories, 1981-2006*, catalogue no. 91-520, Population Projections Section, Demography Division, 1984.

a. Total Fertility Rate = 1.4 in 1996, net international immigration = 50,000.

b. Total Fertility Rate = 2.2 in 1996, net international immigration = 100,000 in 1994.

TABLE 7-8 Projected Average Annual Growth of Government-Insured Health Expenditures, Canada, 1981-2006

	1981- 1986	1986- 1991	1991- 1996	1996- 2001	2001- 2006	1981- 2006
Low Demographic Growth^a				(percentage)		
Population	1.00	0.79	0.55	0.34	0.20	0.57
Physicians' Services						
Per Capita Expenditures	0.46	0.31	0.30	0.43	0.47	0.39
Total Expenditures	1.46	1.10	0.85	0.77	0.67	0.97
Hospital Services						
Per Capita Expenditures	1.08	1.00	1.10	1.18	1.16	1.10
Total Expenditures	2.09	1.79	1.64	1.52	1.35	1.68
Total, Physicians and Hospitals						
Per Capita Expenditures	0.90	0.80	0.88	0.98	0.97	0.90
Total Expenditures	1.90	1.59	1.42	1.31	1.17	1.48
High Demographic Growth^b						
Population	1.04	1.09	1.18	1.06	0.89	1.05
Physicians' Services						
Per Capita Expenditures	0.50	0.42	0.22	0.07	0.12	0.27
Total Expenditures	1.54	1.51	1.40	1.13	1.01	1.32
Hospital Services						
Per Capita Expenditures	1.12	1.05	0.84	0.59	0.58	0.84
Total Expenditures	2.16	2.14	2.01	1.65	1.47	1.89
Total, Physicians and Hospitals						
Per Capita Expenditures	0.94	0.87	0.66	0.45	0.45	0.67
Total Expenditures	1.98	1.96	1.84	1.51	1.35	1.73

a. Total Fertility Rate = 1.4 in 1996, net international immigration = 50,000.

b. Total Fertility Rate = 2.2 in 1996, net international immigration = 100,000 in 1994.

1986) and decreases slightly for a few years in both demographic projections. It then rises again in the low demographic growth scenario but declines in the high demographic growth scenario.

Table 7-9 presents the results of the projections from a different point of view by looking at the proportion of the population and of health expenditures imputable to persons 65 and older. Although this group represented 9.6 percent of the population in 1981, it accounted for an estimated 39.0 percent of hospital service expenditures and 15.7 percent of physicians' service expenditures. In 2006, whatever the demographic projection, it will account for much more. For example, in the low demographic growth scenario, the group will represent 14.7 percent of the population. If consumption patterns by age and sex do not change, it will account for 22.0 percent of expenditures on physicians' services and 50.2 percent of hospital service costs.

These projections apply to only part of the health services sector, physicians' and hospital services. Projections that include other kinds of health services and facilities were recently prepared by Woods Gordon Management Consultants (1984) for the Canadian Medical Association's Task Force on the Allocation of Health Care Resources (1984). According to this study, utilization of services particularly necessary to the aged, such as long-term care facilities and home care services, is expected to increase at a faster rate than use of physicians' and hospital services.

Clearly the aging of the Canadian population will have an important impact on the future costs of health services. However, the magnitude of that impact, in relation to other factors that may also influence health care costs, is open to question. To determine that magnitude, it is important to define those factors and their possible impacts, even though their effect is more difficult to predict than the effect of demographic changes.

The Technology of Health

Depending on the nature of the technological changes, this factor could decrease or increase costs. Some early important changes in technology are believed to have led to decreases in costs: the development of antibiotics and immunization techniques are good examples (Ricardo-Campbell, 1982, chap. 2). However, it is generally agreed that more recent technological changes had the opposite effect, by making available more sophisticated instruments to prolong the life of the sick. A crude estimate is that technology has increased costs in the United States by about 0.6 percent a year during the 1947-67 period (Fuchs, 1972, p. 63). In a chapter of their report devoted to medical technology, the Task Force on the Allocation of Health Care Resources (1984) states: "Our 'guess' is that the introduction of new technologies has caused an annual percentage increase, in real costs, of between one and three percent of total health expenditures per year over the last decade" (p. 58). These numbers are of the same

TABLE 7-9 Projected Share of Health Services Used by Older Persons, Canada, 1981-2006

	1981	1986	1991	1996	2001	2006
Low Demographic Growth^a						
Population	9.6	10.7	11.9	13.1	14.0	14.7
Physicians' Services Expenditures	15.7	17.0	18.8	20.3	21.3	22.0
Hospital Services Expenditures	39.0	41.6	44.8	47.7	49.4	50.2
Total, Physicians and Hospitals	32.0	34.4	37.4	40.1	41.8	42.8
High Demographic Growth^b						
Population	9.6	10.6	11.7	12.4	12.8	13.0
Physicians' Services Expenditures	15.7	17.0	18.3	9.3	19.8	20.0
Hospital Services Expenditures	39.0	41.4	43.8	45.7	46.9	47.3
Total, Physicians and Hospitals	32.0	34.3	36.5	38.3	39.5	40.0

a. Total Fertility Rate = 1.4 in 1996, net international immigration = 50,000.

b. Total Fertility Rate = 2.2 in 1996, net international immigration = 100,000 in 1994.

order of magnitude as the effect of the aging of the population. Of course, the impact of this factor on future health care costs is very difficult to evaluate. But it is not impossible, given the kinds of technological advances taking place at present (such as the introduction of computer technology for diagnosis), that the magnitude of the impact will be higher in the future than it has been in the past.

The Productivity of the Economy

The future burden of the health services sector on the economy will depend in part on changes in national productivity. For example, if productivity increased two percent per year and relative prices did not change, the capacity of the economy to pay the costs of health would become greater in spite of aging, since the magnitude of the effect of aging is less than two percent. However, it is unlikely that Canadians will be able to enjoy all of this advantage, because relative prices may change. Given that the health sector is very labour-intensive, productivity gains in other sectors of the economy that lead to higher wage scales will probably also lead to higher wages in the health sector, thus increasing the relative price of health services. However, some margin of flexibility may remain if the growth of factor prices remains low in the health services sector.

Table 7-10 presents a rough estimate of the future shares of government-insured health services in the GNP, under the assumption that increases in productivity of the working-age population (persons age 15 to 64) that occur in other sectors but not in the health sector will be reflected in higher relative prices of health services (see the Appendix for the derivation of those estimates). In other words, it is assumed that the health services sector will not take advantage of gains of productivity in the rest of the economy. Under both demographic projections, the impact of the changes in the age structure of the population will be to increase the share of government-insured health expenditures in the GNP by about one percentage point between 1981 and 2006. Although significant, this increase appears to be within reasonable bounds, in terms of the future burden of the health care sector.¹²

TABLE 7-10 Projected Share of Government-Insured Health Expenditures in GNP, Canada, 1981–2006

	1981	1986	1991	1996	2001	2006
			(percentage)			
Low Demographic Growth	4.5	4.7	4.9	5.1	5.3	5.4
High Demographic Growth	4.5	4.7	5.0	5.2	5.4	5.5

Source: See Appendix.

Efficient Use of Resources in the Health Services Sector

Many believe that resources are not used as effectively as they could be in the health services sector, especially in the ways institutions are used

to care for the aged (Boulet and Grenier, 1978; Lefebvre, Zsigmond and Devereaux, 1979; Gross and Schwenger, 1981; Woods Gordon Management Consultants, 1984). Important savings could be made of a magnitude to compensate for the effect of the aging of the population. These possibilities open interesting policy options for the future, which will be discussed in the following section.

Future Trends in Health Care Costs: Policy Issues

Since the establishment of the hospital and medical care insurance programs, governments have become the most important economic agent involved in the health services sector. Although expenditures on health care did not actually increase faster than the economy's capacity to pay them in the years following the introduction of those programs, concern is often expressed about high and potentially increasing health care expenditures. Since market mechanisms in the health services sector do not always operate efficiently, some fear that the increases in demand caused by the aging of the population and other factors could create a very heavy burden on society.

Before considering policies that may influence future health care costs, it may be useful to look at the reasons for government involvement in health. Two particular features that characterize the health services sector may account for the situation. First, patients lack information on the kind of care they need to solve a particular problem, and the physician plays a role in supplying that information (Migué and Bélanger, 1972; Fuchs, 1975; Barer, Evans and Stoddart, 1979). Because the providers of services have an influence on both demand and supply, market mechanisms do not work efficiently and government intervention may be used to improve the allocation of resources. The second factor is the growth of the notion that government must ensure that all citizens receive the services necessary to maintain them in good health, because everyone has a right to good health. This was the objective embodied in the basic principles of the Health Charter for Canada (Canada, Royal Commission on Health Services, 1964). Other reasons may be the fear of contagious diseases and the economic advantages (in terms of productivity) of having a healthy population.

Although these are not essential conditions for the imposition of universal public health insurance (policies could be implemented to better inform consumers of health services, and cash payments could be given to individuals who cannot buy all the services they need), they may largely justify past government interventions, at least from a normative point of view.¹³ It can be argued that, since consumers are not affected by prices because of lack of information, governments should set prices and quantities directly, and in-kind transfers should be provided rather than cash transfers (Krashinsky, 1981).

Policies aimed at future change must also take the particular features of the health services sector into account. Two basic philosophies can guide policies designed to improve efficiency in the sector: to try to influence the incentives of the economic agents acting on the market, and to use direct planning by governments.

Policies To Influence Incentives

The basic idea of this approach is that, since a free market may provide undesirable incentives, the role of the government is to establish mechanisms offering the right incentives. This philosophy guides most U.S. health economists in their proposals to reform the health care system (Enthoven, 1980; Ricardo-Campbell, 1982); a notable exception is Reinhardt (1980). It is generally argued that inefficiencies result from excessive government regulation and that the most successful policies would be those that recreated competitive market conditions. Different schemes have been proposed along those lines, involving rules for the determination of relationships between patients, physicians, insurance companies, hospitals, and so on, and usually including mechanisms for helping the poor.

In Canada, health economists have not followed that philosophy, mainly because universal health insurance is already strongly established and widely accepted, so that returning the system to the private sector is very unlikely in the near future. However, the recent practice of imposing direct charges to patients, in particular extra-billing by physicians, which is now widely done in many provinces, is in fact a way to influence incentives. One frequent justification of the practice is that it makes consumers more aware of costs and discourages unnecessary use of health services. A comprehensive study of the effects of user charges was made by Barer, Evans and Stoddart (1979). After examining various schemes such as co-insurance, deductibles and extra-billing, the authors arrived at the general conclusion that "the scope for deployment of direct charges as a strategy for cost containment or efficiency enhancement is extremely limited" (p. 116). The major reason for that conclusion is the physician's influence on demand that was noted earlier: "At least as important as patient behaviour is the behaviour of the provider of services, and this behaviour is likely to shift utilization in a direction opposite to any independent shift in patient behaviour" (p. 14). Furthermore, the study noted that low income groups are more affected by these charges. Badgley and Smith (1979) also found that the poor are more affected, but suggested that user charges may lead to a reduction in the utilization of services.

In his report to the Minister of National Health and Welfare, Judge Emmett M. Hall (1980) strongly opposed the use of extra-billing and other direct charges to patients on the grounds that they go against the basic principles of the Canadian health insurance system, which appear to be

supported by public opinion (Northcott, 1982). Hall was also aware that the problem stemmed from physicians' efforts to counteract the fact that their incomes have not kept pace with inflation. Hall proposed that binding arbitration be introduced to determine physicians' fees at the same time extra-billing was eliminated, presumably assuming that arbitrators would allow increases in incomes. However, there may be some problems in implementing arbitration for physicians (Manga, 1980b; Beck and Horne, 1981).

The question of extra-billing seems to be more a political problem related to the negotiation of fees between provincial governments and physicians than a problem of economic efficiency. Given physicians' high income levels, public opinion is less sympathetic to increases in their fees than to increases in other earnings; this explains the amount of bargaining power that government enjoyed in the past. In the climate of wage constraint of 1984, it would be particularly unpopular to grant physicians increases that exceed the rates applicable to other groups of workers. Extra-billing could then be seen as a politically acceptable way for physicians to increase their incomes.

The majority of the countries with national health insurance programs employ some form or another of user charge (Badgley and Smith, 1979; Manga, 1980a). Unlike the situation in Canada, these charges do not appear to contradict the principles of national health insurance in those countries. Ultimately, the decisions that must be made on this issue in Canada are political ones; they will depend on how strongly Canadian society adheres to the principle of equal access to health services.

Government Planning

Given their important role in all levels of decision making in the health services sector, provincial governments enjoy a considerable amount of power in controlling health care costs. It has been argued (Evans, 1983) that government control over hospital budgets and physicians' fees is the main reason why health expenditures have been lower in proportion to the GNP in Canada than in the United States. To the extent that some resources are not used as effectively as they could be, as many believe, important savings could be realized by better resource planning, especially with regard to care of the elderly.

Several researchers have examined some areas of the health services sector and put forward suggestions to reduce costs. Boulet and Grenier (1978) and Lefebvre, Zsigmond and Devereaux (1979) pointed out that existing hospital facilities may be inappropriate for the care of the aged, and that future investment should be made in facilities better geared to their needs. Gross and Schwenger (1981) analyzed this issue in more detail by looking at the misplacements of elderly patients in different kinds of institutions. They estimated that 10.4 percent of Ontario's institutional expenditures

for the elderly in 1976 could have been saved if patients had been placed in the most appropriate institution (p. 122). Woods Gordon Management Consultants (1984) analyzed several scenarios of change in health care delivery methods and concluded that the change with the largest financial impact consists in a reduction of the institutionalization of the elderly. In a study of three hospitals in the Montreal area, Hochstein (1984) also found that costs could be reduced by converting part of acute hospitals to extended care facilities, although he considered that the potential savings are small.

Other kinds of savings were considered by Evans and Robinson (1980), who examined the costs per episode of surgical care given on an out-patient rather than in-patient basis. They concluded that important savings could be achieved by performing more operations on an out-patient basis. In another article, Evans and Robinson (1983) showed that costs in children's hospitals could be reduced by having parents assume some nursing responsibilities. Finally, Denton et al. (1983) suggested that having some tasks performed by nurse practitioners rather than by physicians could lead to important savings.

These studies demonstrate clearly that costs can be reduced. One potential problem is that incentives do not always exist among patients, physicians, hospital administrators, or bureaucrats to realize these savings. However, given the present organization of the health care system in Canada and the level of government involvement at various levels of decision making, policies could be implemented to ensure that these possibilities are fully exploited.

Summary and Conclusions

This paper presents an analysis of past and future trends in the health services sector in Canada. The findings can be summarized in the following points.

- The health services sector in Canada has experienced growing intervention by governments, which led to the hospital and medical care insurance programs.
- With the implementation of those programs, health expenditures increased rapidly at first, but their share in the GNP remained relatively constant during the 1970s.
- The Canadian performance in controlling the level and growth of health care costs compares favourably with that of the United States and other countries.
- Government intervention in health has a progressive distributive impact.
- The aging of the Canadian population will have significant consequences on future health care costs.

- Possibilities for controlling health care costs through direct charges to patients appear to be relatively limited. Furthermore, low income groups are more affected by these charges.
- Health care expenditures could be reduced by better resource planning, particularly in terms of care for the aged.

Since market mechanisms have been replaced by government intervention in many aspects of the health services sector, many decisions about health care expenditures will be made by Canadian society as a whole, through the political process. Given the scarcity of economic resources, society must decide first what level of resources should be allocated to health services. At the individual level, large sums of money are often spent to save a person's life. At the collective level, however, such an attitude is difficult to maintain. Society may have to decide, for example, how much should be spent on new equipment designed to prolong life rather than on preventive measures. These kinds of decisions, which will become increasingly important given the dimensions of technological change, involve ethical considerations beyond the scope of economic analysis.

The other kind of decision that society has to make concerns how much equality in access to health care it wants. One may wonder why Canadians consider it important for the rich and the poor to have access to the same quality of health care, when they do not consume the same quality of such other goods as cars, housing or food. The present organization of the health care system in Canada, and in particular the system of conditional federal transfers to the provinces, reflect a society's preference, to a large degree, for equality of access to health care across income groups and across regions. Whether or not this preference will remain the same is a question that belongs in the political domain.

Finally, it has to be kept in mind that many factors influencing health are quite unrelated to the health services sector. There is, in fact, a low correlation between the health status of a society and its expenditures on health care (Fuchs, 1975). Other factors such as personal lifestyles, environment, and heredity appear to have a greater influence on health; thus, policies designed to improve the health of Canadians must go beyond the health services sector.

Appendix

Derivation of Share of Government-Insured Health Services in GNP for Table 7-10

Total government-insured health expenditures H (defined as expenditures on physicians' and hospital services) can be written

$$H = spN \quad (1)$$

where s is the number of services per capita (or per capita expenditure in constant dollars), p is the relative price per service and N is the total population. The proportion of health in the GNP h is

$$h = H/Y \quad (2)$$

where Y is GNP. Define GNP per productive ages population (persons age 15 to 64) y as

$$y = Y/nN \quad (3)$$

where n is the proportion of the total population which is age 15 to 64. Substituting from (1) and (3) into (2) and rearranging, we obtain

$$h = sp/yn \quad (4)$$

or, taking logarithms,

$$\ln h = \ln s + \ln p - \ln y - \ln n$$

The growth rate of h is obtained by taking the derivative with respect to time t

$$d\ln h/dt = d\ln s/dt + d\ln p/dt - d\ln y/dt - d\ln n/dt \quad (5)$$

This expression can be used to analyze possible future shares of health in the GNP. Note that $d\ln s/dt$ can be calculated from the projection of health expenditures (it is equal to the growth rate of per capita expenditures in Table 7-8) and that $d\ln n/dt$ is also available from the demographic projections. However, $d\ln p/dt$ (the growth of the relative price of health) and $d\ln y/dt$ (an approximation of the growth of productivity of the economy for working-age population) are not observable. Given the fact that health is a very labour-intensive sector, its productivity will probably increase less than the productivity of the rest of the economy. However, wages in the health sector in a competitive economy should

increase at approximately the same rate as wages in the rest of the economy, so that the relative price of health services would increase at the same rate as productivity. A rough assumption would then be

$$d\ln p/dt = d\ln y/dt \quad (6)$$

and (5) could be expressed uniquely in terms of observable variables

$$d\ln h/dt = d\ln s/dt - d\ln n/dt \quad (7)$$

This argument assumes that no advantage for the health services sector can be taken from productivity increases in the rest of the economy. Shares of government-insured health expenditures shown in Table 7-10 were calculated using (7) and assuming an initial value of 4.5 in 1981, which corresponds roughly to the share observed during that period.

Notes

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1. For more details on the evolution of government intervention in health, consult Canada, Royal Commission on Health Services (1964, vol. 1, chap. 10); Badgley and Smith (1979, chaps. 3 and 4); Boulet and Grenier (1978); Hall (1980); Warner (1980); and the Task Force on the Allocation of Health Care Resources (1984, chap. 4).
2. Figure 7-1 starts at 1960 only because comparable data are not available for previous years. However, it may be worth noting that government spending on health care started increasing before that year, since all the hospital insurance programs were already in place by that time. For the evolution of public hospital expenditures since 1943, see Statistics Canada (1982).
3. Other factors that may have influenced the evolution of the number of physicians are the number of places in medical school and immigration policy.
4. Actually, the net income of physicians started increasing faster than the CPI and other incomes before the 1960s (see Evans, 1983).
5. There are, however, some reservations in these comparisons based on income tax data. Lacroix, Robillard and Lemelin (1978) provided other evidence supporting those results. Using regression analysis to control for the effects of the number of years of experience and the number of years of schooling, they showed that physicians still enjoyed a significant income advantage over other professional groups. The data base for that study is the 1973 survey of highly qualified manpower.
6. The data in Figure 7-4 can be used to calculate an average growth rate of 3.2 percent in Canada and 3.3 percent in the United States (by fitting a trend regression line). This also points to the fact that the better performance in Canada of health expenditures as a percentage of GNP can be partly attributed to higher GNP growth in Canada (see Simanis and Coleman, 1980). However, it should be noted, as a counter-argument, that Canada's better performance is found mainly in the part of health services which depends on government health insurance programs, i.e., hospitals and physicians' services.
7. For example, Beck (1974) showed that the introduction of a co-payment in Saskatchewan in 1968 resulted in a greater reduction in use of medical care by low income than by high income families.

8. Costs of government-insured health services are approximated by costs of general and allied special hospitals and of physicians' services. The estimates are based on data on morbidity and on provincial medical care insurance accounts (see Boulet and Grenier, 1978, pp. 46-50).
9. The actual level of costs has obviously changed since the data for Figure 7-5 were produced. However, since the aim here is only to measure the change due to demographic projections, the units of measurement are arbitrary and the data from Figure 7-5 can still be used. The pattern by age and sex seems to have remained relatively constant since that time. For example, hospital morbidity statistics show that the age pattern of patient-days per capita did not change much, although there was a slight decrease for all ages (see Statistics Canada, cat. no. 82-206).
10. Projections of mortality are based on recent trends of mortality rates by cause. For more details, see Statistics Canada (1984).
11. Let H be total expenditure, s be per capita cost of a unit of service, N be total population and t be time, we have

$$H = sN$$

$$\ln H = \ln s + \ln N$$

$$d \ln H / dt = d \ln s / dt + d \ln N / dt$$
 which are the growth rates.
12. It is nevertheless higher than previous estimates (see Denton and Spencer, 1983). This is due, at least in part, to the different demographic projections that are used for this study.
13. Government intervention in health could also be explained from the point of view of positive economics, i.e., from the behaviour of technocrats and other decision makers who maximize their utility (see Boulet, 1979).

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Comprehensive Income Security for Canadian Workers

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Introduction

Over the past 50 years, income security in Canada has evolved into a far-reaching system. It now includes both cash transfer programs of income maintenance and social insurance and similarly oriented income tax provisions. There are few legitimate doubts about the importance of the system in providing a safety net for workers and those unable to work. Yet these programs are the object of recurrent public criticism on a number of grounds and from varied perspectives. They are perceived as overly complex, with both overlaps and gaps, and as requiring excessive administrative and compliance resources. Programs intended to help those most in need are felt to be poorly targetted, with large spill-overs to non-needy groups and inadequate benefits to some needy persons such as the working poor. There are also perceived inequities in the benefit levels of various beneficiary groups. Some observers believe the programs are excessively costly in terms of public expenditures and foregone revenues. And the programs are frequently criticized for creating numerous disincentives and labour market distortions which raise their true economic costs.

Even ardent supporters of income security would grant that critics of the Canadian system have many valid points. The system should be amenable to major reforms which would significantly improve its performance in most of the cited respects. This study will address the principal issues in reformulating Canadian income security programs into a comprehensive system. The analysis will examine income security delivered as direct cash transfers, via the personal tax system, and through subsidized private and special public employment programs. It will focus on the requirements of income security for workers — that is, persons who “can” work and whom society deems “should” work. For reasons of space and

of relevance to the Commission's mandate, the study will not address the separate issues of in-kind benefits or income security for non-workers. Our focus on employable persons permits closer analysis of worker adaptability, induced unemployment, and other labour market concerns. In this study, non-workers refers to both those who "cannot" work (the permanently disabled and severely handicapped) and those whom society deems "should not" or "need not" work (the elderly and perhaps single parents with preschool children). Hence, we shall avoid most issues relating to pension policies, social services, Social Assistance for unemployables, and workers' compensation programs.¹ Of course, the study must confront the design of means for categorizing workers and non-workers for income security purposes.

This study first enumerates and assesses the objectives and values that might be chosen in designing an income security system. The multifaceted character of income security programs makes this preliminary exercise a critical one. Next, several major issues in the structural design of a comprehensive system for Canadian workers are discussed. These issues concern the interrelations among the various types of transfer programs, the relative emphasis on different methods of delivering benefits, the role of employment policies, and ways of combining adequate support with appropriate incentives in the labour market. Assessment of these issues yields the general design features of a comprehensive system of income security for Canadian workers. The next section offers further details about Canadian program provisions that should be modified to reinforce the new system. Then the financial viability of the suggested approach to income security is briefly discussed. Approaches to implementing the scheme and alternative ways of structuring several of its provisions are also examined. The study closes by offering further policy considerations and a conclusion.

Although many specific features are suggested here for a reformed income security system, this study does not pretend to be a blueprint for legislative action. Rather, it aims to illustrate the potential of a major reorientation of Canadian income security policies to promote employment as an essential complement of income support. The suggested approach builds upon some existing transfer programs and tax provisions and reduces or abolishes others. The system substantially curtails the role of unemployment insurance (UI) and greatly expands programs of special public and subsidized private employment. For household units with inadequate earnings and UI benefits, the government would essentially guarantee employment opportunities, albeit at low wages. The proposals enlarge the use of demogrants² and would be consistent with reform of personal taxation through a flat-rate tax. However, the system does not adopt a single global scheme such as a negative income tax to supplant all existing programs. The reasons for choosing a more incremental and eclectic approach will emerge in the course of the study.³ And although

the proposed approach to income security could significantly reduce unemployment, it alone could not restore full employment. That objective will obviously require improved performance by the Canadian economy.⁴ A final caveat is that the proposed system will unavoidably produce losers as well as winners. The illustrative scheme holds net budgetary costs at the same order of magnitude as existing programs, in order to show the potential gains from rationalizing the system.⁵

Objectives and Values in Program Design

There will always be diverse views concerning the proper objectives and values of an income security system and their relative importance. Choosing objectives and values is a critical first step in assessing or designing income security programs.⁶ This section enumerates the ten most important, commonly cited goals: adequacy of support, responsiveness to income changes, rate of take-up, interpersonal equity, budgetary economy, incentives, personal responsibility, dignity of beneficiaries, ease of compliance, and administrative ease and economy. Some of these goals are complementary or even alternative ways of viewing similar points, while others are potentially conflicting. Each objective is discussed individually, and its interrelations with other objectives and associated value judgments are examined. The approach stresses the core values that are likely to command widespread acceptance in contemporary Canadian society.⁷ These values include the desire to help unfortunate individuals, to be insured against labour market risks, and to maintain one's relative economic position. Most Canadians also want the income security system to support the work ethic, personal responsibility, and the dignity of beneficiaries as far as reasonable. Our treatment in later sections accepts this general viewpoint as the relevant one for policy formulation.

Adequacy of Support The foremost objective of any income security system is that it provide adequate income support for persons in need. In its absolute form the adequacy criterion becomes an income floor or social safety net. This approach relates the cash transfer to the beneficiary's current income or resources, as in income maintenance programs. Alternatively, a relative version of the adequacy criterion relates transfers to the beneficiary's previous earnings level, as in social insurance programs. Adequacy of income support can also be assessed in relation to family size and composition, regional living costs, and personal resources such as savings or health status. A program's adequacy typically has major effects on its budgetary economy, interpersonal equity, and incentives.

Responsiveness to Income Changes Income security benefits must respond reasonably quickly to the changing incomes of individuals if their needs are to be met. The question of how deep and persistent an income

loss has to be to draw compensation is an aspect of support adequacy. It may be deemed more important that programs respond quickly to certain kinds of income loss than to other income changes. Moreover, how responsive a program should be depends upon one's view about personal responsibility for saving to bridge temporary income losses. A program that is highly responsive to recent income changes will carry greater budgetary costs. This question also raises the issue of whether benefits should be recovered from individuals who suffer low incomes for short periods followed by a return to their normal higher incomes.

Rate of Take-Up It is desirable that benefits of cash transfer programs be readily taken up by most individuals who fulfill the eligibility provisions. This criterion is simply one aspect of the more general objective of interpersonal equity. High take-up rates typically reflect a program's ease of compliance, dignity of beneficiaries, and its responsiveness to income changes. Universal transfer programs generally rate better than selective ones in all of these respects and hence have higher take-up rates. Rates of take-up need to be assessed differently for special employment programs, since some eligible individuals will choose not to participate for reasons other than perceived stigma or administrative hassles. For example, they may prefer to pursue productive non-market activities within the home or to continue their search for regular work.⁸

Interpersonal Equity An income security program should satisfy various notions of interpersonal equity. These include the differential treatment of beneficiaries in varying situations, such as different family sizes and structures, common law versus legal marriages, and the like. These notions also reflect views on the relative positions of beneficiaries and non-beneficiary groups, including the working poor. One aspect pertains to savings behaviour over the life cycle. For example, financial assets and home equity make many elderly households less poor than their current income suggests. Another aspect relates to voluntary leisure and productive activities in the home. Because of their psychic benefits, these activities may warrant less income support than involuntary unemployment. To provide greater interpersonal equity, a program needs to examine more characteristics of claimants and therefore has heavier administrative and compliance burdens.

Budgetary Economy A common concern about income security programs is their net impact on the public budgetary balance. This objective includes gross direct expenditures and tax revenues foregone for income security purposes. It also reflects any portion of benefits recovered through personal taxes or "clawback" provisions which recoup the benefits at rates other than the individual's ordinary tax rate. The budgetary economy of

income security programs is determined largely by their support adequacy, eligibility provisions and take-up rates, responsiveness to income changes, and incentive effects. The rate at which net benefits are decreased for higher incomes of individuals exerts a major impact on program costs, since it determines the eligible population below the program's "break-even" income level. Administrative costs also enter into total costs but usually play a modest role.⁹

Incentives It is desirable that income security programs not impair incentives for individuals in their economic and social actions. This is simply a matter of economic efficiency. On the supply side of the labour market, programs should support beneficiaries' incentives for work effort, job training and skill upgrading, occupational and geographic mobility, and stable work attachments. On the demand side, which is more influenced by program financing, incentives should augment total employment levels, as well as the seasonal and cyclical stability of work. Programs should pose minimal distortions to the savings incentives of both actual and potential beneficiaries. And incentives regarding family formation, family structure, and support of dependants should not be unduly affected by program eligibility or benefit provisions.

Personal Responsibility Another way of viewing the incentives objective is that income security programs should foster personal responsibility. Whereas the incentives view stresses economic efficiency and perhaps budgetary economy, the personal responsibility view emphasizes widely held social norms — that individuals should be as self-sufficient, responsible, and adaptable to their economic prospects as possible. Hence, income security programs should be structured so as to reduce dependence upon them, get beneficiaries back into the job market, and encourage private provision against temporary earnings losses. Of course, views differ about exactly how much adaptability one can reasonably expect from claimants — how much occupational or geographic mobility, how much of a cut in pay from their accustomed rate, and so forth. Income maintenance programs are typically more exacting in these respects than social insurance programs. Presumably this difference arises because claimants for the latter feel that they have "paid for" their benefits.

Dignity of Beneficiaries A modern view of income security programs is that they should pose minimal stigma and harassment to persons claiming or receiving benefits or undergoing eligibility reviews. The dignity of beneficiaries is largely a function of the visibility of the process; on these grounds, universal benefit or income tax related schemes may be preferred. As most employable beneficiaries are imbued with the work ethic, their dignity may be enhanced by providing support through employment pro-

grams or premium-financed social insurance. Programs are also likely to be more acceptable if their provisions are simple, requiring little probing into the personal lives of applicants. In the past, demeaning procedures have been imposed as a response to taxpayers' concerns about work effort and budgetary economy. Yet if reasonable incentives can be built directly into the benefit structures of programs, there is little sense in retaining such harassing features.

Ease of Compliance Income security programs should be relatively easy for eligible individuals to comply with in terms of the requisite knowledge, waiting times, and documentation and travel expenses. This goal is facilitated by simple program provisions, with clear and objective standards of eligibility and benefit rates. It is hindered by the use of administrative discretion or arbitrary quotas as methods of rationing program funds. Clearly, ease of compliance is closely associated with the dignity of beneficiaries and higher take-up rates. It is inversely related to program provisions that increase interpersonal equity.

Administrative Ease and Economy Income security programs should be as easy and economical to administer as the other objectives permit. This criterion favours the use of readily observable characteristics of claimants in determining their initial and continuing eligibility and benefit rates. It also tends to support infrequent reviews of their characteristics, which may run counter to the objective of responsiveness to income changes. Simple provisions for eligibility and benefit rates will undoubtedly ease program administration but may sacrifice the interpersonally equitable treatment of diverse situations. Administrative ease and cost, while significant concerns, should not be allowed to override other important goals in designing the income security system.

Key Issues in Restructuring the System

Eight key issues must be assessed in designing an improved income security system. These structural issues pertain to the methods of delivering benefits, the interrelations among various types of programs, the role and structure of employment programs, and the provisions needed for desirable incentives in the labour market. These issues are examined here in the light of the values and objectives discussed earlier and in view of the relevant factual evidence. Our resolution of these issues provides the general structural features of an income security system appropriate to the needs of Canadian workers and the Canadian economy. The next section suggests some necessary changes in program provisions at a more specific level than the structural features examined here. Additional issues such as program definition of the family unit and income accounting principles lie at a more detailed level of program design than can be addressed in this study.¹⁰

Should the income security system be categorical in its treatment of employable versus unemployable groups? How should the categorizing provisions be structured?

The early appeal of the negative income tax (NIT) concept stemmed largely from its proposal to abandon categorical treatment of beneficiaries. Categorical methods of traditional welfare systems were believed to be inequitable, stigmatizing, and administratively burdensome. However, the proposal to abandon categories was later discovered to have major drawbacks. To control the budgetary costs of a program which offered uniform benefits to all lower income claimants required a miserly level of benefits. Conversely, the provision of non-categorical negative income tax benefits approaching the welfare rates and non-cash benefits in the more generous jurisdictions implied a very costly system with unacceptable tax rates.

To illustrate the problems of non-categorical treatment, we consider a scheme of the credit income tax (CIT) variety. The CIT would pay demogrants or credits to all persons irrespective of income and then impose a flat-rate tax on a broad measure of personal incomes. The requisite tax rate equals the per capita credit plus the net per capita tax revenue needed for other spending, each expressed as a percentage of average personal income. Assume credits set at 50 percent of average per capita incomes, which would approximate the Statistics Canada low income cut-off levels for mid-sized cities. Then the required flat rate of tax would be 50 percent plus about 12 percent for general revenues, or a total rate of 62 percent.¹¹ Such a high tax rate would be infeasible for reasons of disincentives and public acceptance. This example illustrates the barriers to adopting a non-categorical CIT at a fully adequate level.¹² Only a categorical form of CIT, which paid relatively low credits to the employable majority of the population and reserved high credits for unemployables, would allow tolerable tax rates.¹³ The NIT format pays out benefits only to persons at lower incomes; that is, it nets out taxes from the guarantee amounts before disbursing its payments. Nevertheless, the NIT has been proven to suffer the same conflict as the CIT between offering non-categorical treatment and posing excessive marginal tax rates.¹⁴

These findings about budgetary costs and tax rates, even more than fears about work disincentives for recipients, explain the failure to implement a general non-categorical NIT in North America. Yet *categorical* forms of a NIT were established for the elderly in Canada (the Guaranteed Income Supplement) and for the disabled and elderly in the United States (Supplemental Security Income). Traditional welfare was kept for other permanently or temporarily unemployable groups and to a lesser extent for unemployed employables, but with scant benefits for the working poor.

In these ways society has expressed its differential willingness to support unemployable vis-à-vis employable persons. Society appears willing to provide only work-related benefits for the working poor, if any at all. At the Canadian federal level there is no general program of work-related subsidies, and the working poor derive only the modest payments provided for dependent children.¹⁵ In short, our society has strong concerns about budgetary economy, work incentives, and personal responsibility which confine it to a categorical income security system.

Although we are practically restricted to a categorical system, our program design should still make the most of it. The categories should be relatively simple to assess, so as to ease both administration and compliance, and should involve minimal stigma. The benefit structures can be tailored to the work incentive requirements of each category.¹⁶ The proposed system would provide benefits for the employable category — demogrant or work-related benefits for the working poor, and special public or subsidized private employment for unemployed workers. The unemployable category can be given NIT payments with a high benefit reduction rate — the marginal rate at which benefits are reduced for each dollar of income — since work incentives are less relevant for them. Benefits for employable beneficiaries can be supplied via wage or earnings subsidies, training grants, employment tax credits, or special public employment. In this way the use of categories facilitates a desirable balance of work incentives, benefit adequacy, and program economy. The provision of benefits for the employable category reduces the incentive for individuals to feign disability or unemployability. This approach also eases the administrative difficulties of categorizing individuals.¹⁷

The unemployable categories would include the elderly, the disabled, and single parents with major child care responsibilities. Age is easy for administrators to assess and difficult for claimants to falsify. Disability can be assessed via the standard physical and psychological tests, with an unavoidable grey area for some cases. Where appropriate, disabled but not elderly beneficiaries can be referred to publicly subsidized sheltered workshops; these would pay very modest wages to supplement the individuals' relatively high NIT payments. Views differ about when a single parent can be deemed employable — whether the youngest child must be of daycare age, school age, or older. This decision also hinges on the availability, cost, and finance of daycare facilities. Regardless, reasonably clear-cut criteria for categorizing single parents as employable or unemployable should prove feasible.¹⁸ All claimants who do not fall within one of the unemployable categories would be deemed employable. However, all employable claimants need not qualify for the same benefit programs. For example, budgetary economy of the system may dictate limiting access to special employment programs to workers in families with inadequate total earnings, as discussed below.

Should income security programs be universal or selective in their benefit payments? What are the relative economic, redistributive, and social properties of the two methods?

Selective programs impose a test of the beneficiary's income *prior* to the payment of a benefit, and the benefit rate is inversely related to the recipient's income level. Universal programs, in contrast, distribute the same level of gross benefits to all persons with specified traits, irrespective of their incomes. Such programs rely on the tax system for effecting *net* redistribution, thus performing their income test *after* the payment of benefits. This can be done simply by imposing higher marginal rates in the personal income tax or by applying special tax recovery or clawback devices to the benefits. Hence, a universal program can be as highly targeted or redistributive in its *net* benefits as a selective program. While it distributes greater amounts of gross benefits, the universal program's *net* budgetary requirements need be no larger than those of the selective program. And while the universal program may impose higher marginal rates on taxpayers, selective programs typically impose higher marginal tax rates on their beneficiaries as part of their income tests. Therefore, both program types potentially incur work disincentives and economic inefficiencies. On purely economic or distributional grounds, there is no clear-cut case for one payment method over the other.¹⁹ This conclusion differs from the popular view that selective programs are innately more efficient, better targeted, and less costly — a view which fails to consider the taxation provisions that accompany the income security system.²⁰

Since the economic factors are not decisive, we have to examine non-economic factors to rank the payment methods.²¹ Universal programs are usually superior in terms of ease and cost of administration and compliance, but these advantages may be offset by complexities in the associated clawback devices. Indeed, with special categorical benefits it is often easier to apply the income test in advance, using selective methods. The reason is that a clawback has to be integrated with tax withholding at source, and employers then have to know which of their workers are receiving the categorical benefits. This adds to the complexity of the system and also increases the stigma for categorical beneficiaries. On these grounds, our proposed system adopts universal payments only for benefits available on simple criteria such as age, number of children, marital status, or the like. More complex categorical payments, such as those for the unemployable groups, may be better handled by selective methods.

Virtually all the other non-economic considerations tend to favour the use of universal programs.²² Universal payments are superior in terms of protecting the dignity of beneficiaries, as well as their take-up rates, social cohesion, and perhaps political support of the programs. Recipients face no delays in the processing of benefit claims, because gross benefits are

paid continuously. Net benefits can respond quickly to income changes, since any income testing is performed frequently through tax withholding at source on wage and salary incomes. For the relatively few self-employed and persons living on property incomes, these adjustments can be integrated into the quarterly estimated tax payments. Individuals who have lost their jobs will have to wait until tax-filing time to receive a partial refund of taxes paid earlier in the year. Yet they will immediately enjoy net benefits equal to the gross level of any universal payments.

The preceding analysis of universality and selectivity pertains to income maintenance programs. Social insurance programs have a different rationale which makes universal payments generally appropriate.²³ Social insurance benefits are not intended to redistribute in the same sense as income maintenance benefits. They are intended to provide a form of insurance, in which the individual worker and the employer pay premiums approximating the cost of the worker's *expected* future benefits. Individuals collect benefits by meeting pre-specified conditions, such as being unemployed or reaching retirement age, irrespective of their income at that time. Hence, social insurance has no need for an income test other than the ordinary taxability of benefits. Our proposed reforms of unemployment insurance would therefore maintain and strengthen the universal payment of benefits. Any improved targetting of funds currently devoted to UI benefits would be achieved by redirecting them to more explicitly redistributive types of programs.

How should the income tax system and demogrants be structured in relation to the rest of the income security system?

Personal exemptions in the income tax system perform income security functions by relieving lower income units of tax liability and differentiating taxes by family size.²⁴ However, with a progressive set of tax rates, the exemptions provide larger tax savings for households with higher incomes. The refundable child tax credits play a more explicit redistributive role by paying out funds, or offsetting taxes due, for dependent children in low to middle income units. As demogrants, the Family Allowances are payable to all units with dependent children irrespective of income. The child tax credits are paid on a selective basis, with a prior test based on both parents' net incomes, while the Family Allowances are paid universally subject only to ex post taxability. The three fiscal provisions for dependent children exert contradictory distributional effects and impose a needlessly complex system.

The current system of tax provisions and demogrants could be improved in terms of both simplicity and income security objectives. The child exemptions and tax credits would be abolished, and the Family Allowance for children would be enlarged. If greater targetting of the net benefits

were desired, the current taxability of the payments could be replaced by taxability at higher rates or a special clawback device.²⁵ This approach would reverse the distributional pattern of the exemptions, making the net benefits for children decline at higher family incomes. It would also eliminate the shortcomings of the tax credits — slow response to income changes, a single annual lump payment, administrative and compliance burdens of additional tax returns, and incomplete take-up. The other personal tax exemptions, for each filer and for married status with a non-filing spouse, could similarly be replaced by demogrants. These expanded demogrants would be paid on a monthly, universal basis to each adult in the country, along with the existing child payments. They would provide greater income security than the personal exemptions by automatically paying net cash benefits to households with low incomes.

The proposed demogrants would facilitate major reforms to personal taxation as well as a comprehensive income security system. Without any personal exemptions, a flat-rate income tax could easily be implemented by extending source withholding at uniform rates to most income types. The regular receipt of demogrants by all persons would eliminate or offset tax burdens at lower to middle income levels, preserving the effective progressivity of average net tax rates. This form of flat-rate tax is called a credit income tax, since the demogrants are simply refundable credits. A higher surtax rate could also be applied at relatively high incomes if desired. With the flat tax rate there would be little sense in taxing the demogrants, although they could be subjected to clawback at higher incomes.² Universal payment of demogrants would mean that the special categorical benefits could be smaller. This would moderate the incentives for individuals to get themselves classified in the special categories. Still, the demogrants would be modest in size, so that most of the unemployed would also need UI benefits or wages from special public or subsidized private employment.

How should income maintenance, social insurance, and employment programs be interrelated? To what extent should the balance among them be altered?

The optimal linkages and balance among the three types of income security programs must be guided by the functions that each performs best. Income maintenance works best at ensuring an absolute floor under incomes when this cannot be done in employment-related ways. Its benefits may be related to the claimant's current needs in a variety of ways but are unrelated to a previous earnings level or work history. Accordingly, income maintenance is most suited for unemployable persons as the major method of income support. However, it can also be used to provide demogrants related to family size, to supplement the undifferentiated benefits of social insurance and employment programs. A social insurance program like UI

is best at providing benefits related to the claimant's previous earnings level and work history. It thus reflects workers' desire to maintain their accustomed living standards during jobless spells and their willingness to pay earnings-related premiums to finance the scheme. But UI is poorly suited to redistribution according to claimants' current needs, since only previously insured workers qualify and the earnings of other family members do not affect the claimants' benefits.

Most social insurance programs do in fact have some overtly redistributive features, often perverse ones. These features, as well as popular misunderstanding of social insurance, lead to periodic suggestions that the benefits be more precisely targetted, either by prior or ex post income tests. The introduction in 1979 of a benefit repayment provision for higher income recipients of unemployment insurance, a clawback device, is one such example.²⁷ Some analysts have recommended that all UI benefits be subjected to prior income tests based on family income.²⁸ This would turn the program partially toward income maintenance, and its premium finance would become questionable. It would be more satisfactory to remove the redistributive provisions from UI and expand income maintenance and targetted employment programs. These programs can redistribute incomes more effectively, since they have more appropriate provisions for the family unit, the accounting period, and the measurement of need. Reducing the social insurance portion of the income security system would also reduce the effects discouraging employment that accompany the premiums used to finance these programs.²⁹

Employment programs — whether direct public-sector employment or incentives for private-sector employment — serve to combine income support with work activities. The employment aspect may be valued for reasons including work incentives, maintenance of skills, the dignity of beneficiaries, the production of useful output, and budgetary economy. The use of employment programs provides an effective work test, which may be desired to distinguish claimants who are truly willing to work from those who seek subsidized leisure. This is one aspect of the personal responsibility and interpersonal equity objectives and is also a concern of many taxpayers whose support is needed to sustain the income security system. Because of their unique advantages, employment programs should form the centrepiece of comprehensive income security for Canadian workers. Yet it should be recognized at the outset that these programs carry significantly higher costs of administration, and perhaps of compliance, than the other types of programs. Extra output in terms of tangible goods and services, and in worker experience, incentives, and skill maintenance, would be needed to compensate society for these higher administrative costs. Moreover, the design of employment programs has to surmount political barriers to attaining useful net output; without this they may be more costly than the alternative program types.

The advantageous features of each of the three program types can be exploited in a comprehensive income security system. Workers and their families, like all other members of society, would receive monthly demogrants irrespective of their employment status. But the demogrants would not provide adequate support without additional income from either regular work or from a social insurance or employment program. Upon losing his job, the worker's next source of support would typically be UI. For unemployed workers with inadequate total family income from earnings and UI benefits, employment or training program positions would be provided. Employment programs would also be open to employable persons who do not qualify for UI. One or more persons per household would be certified for these positions, depending upon the gap between the household's income and the minimum assured income for households of that size and locale. In the majority of cases, secondary workers in families with another full-time worker would not qualify for special employment. Employable persons could draw categorical income maintenance only when their UI benefits were exhausted or inadequate and they could not find an employment program vacancy.

To what extent should the acceptance of suitable work or training be required of employable recipients of social insurance or income maintenance benefits?

The preceding suggested structure for income security would impose strong requirements for work or training upon employable beneficiaries. Benefit payments other than the demogrants would be conditioned upon active job search and acceptance of available positions for work or training. Strong work requirements can be justified on the basis of objectives and values underlying the income security system. They are consistent with minimal disruption to work incentives, the personal responsibility of beneficiaries to support themselves as far as they can, and maintaining the dignity of beneficiaries in a society governed by the work ethic. Work requirements can also serve the budgetary economy of income security programs in two ways — by reducing the frequency and duration of program dependencies, and by obtaining useful output that would otherwise not be produced or be produced only at higher cost. This approach can also promote interpersonal equity among unemployed employables who wish to work, the working poor, and persons voluntarily out of the labour force.

To some observers, the proposed work requirements may seem overly strong. Yet they are not radically different than requirements of the existing income security system, and they offer unemployed persons new opportunities as well as responsibilities. The existing UI program already requires that claimants be actively seeking work and that they accept suitable refer-

als to jobs or training programs. In practice these provisions are enforced quite unevenly, because of the limited resources of manpower personnel and the limited availability of job vacancies and training positions. The proposed system would strengthen the active job search provisions of the UI program.³⁰ It would not require UI beneficiaries to accept special public or subsidized private work as a condition for obtaining their UI benefits, but it would require that employable claimants accept any suitable special employment vacancies as a precondition for receiving categorical income maintenance. Employable applicants for Social Assistance are already required to provide continuing evidence of active job search. Employment on special government programs would be guaranteed for eligible individuals without time limit so long as suitable positions were available. The workers would be released from their special work for limited times to search for regular work when suitable vacancies appeared.

A necessary condition for strengthened work requirements is a mechanism to ensure an adequate supply of positions in the employment programs. The system should be structured so as to induce the government to fund these programs adequately. The categorical Social Assistance benefits provided to unemployed employables when there are no suitable special job positions should be made more accessible and more generous than at present. The federal government will have to bear most of the incremental costs of liberalizing the Canada Assistance Plan to achieve these improvements. Hence, the government will have financial incentives to fund the employment programs adequately. Other changes in the scale and financing of the UI program, to be described later, will give the government the fiscal resources needed for this major expansion of employment-related policies. Proposed changes in UI benefit durations will further reinforce the incentives for job search by the unemployed and strengthen the new system's work requirements for UI exhaustees.

What is the potential application of special public employment programs? How should they be structured as part of a comprehensive income security system?

Special public employment programs offer the potential of providing useful additional output and productive work as an integral feature of the income security system. Previous experience with work relief suggests that these activities should be confined primarily to public services and that most goods production should be left with the private sector.³¹ This conclusion is dictated both by the relative productivity of the private sector in goods production and by the political opposition of business to competition from the public sector.³² Hence, to the extent that additional production of private goods by unemployed employables is desired, this should be done via fiscal incentives to stimulate their employment by business firms. Suitable public services for employing these individuals include many

activities currently performed by all levels of government. The most suitable activities use unskilled to semiskilled regular public employees at relatively high wage rates. The “special” public employees could be given some positions that would otherwise be filled by regular employees. Equally important, their use could allow an expansion of these activities and even the provision of new public services because of the lower wage costs. Although some existing jobs would be displaced, there is also the potential for substantial net employment creation.

Several examples can be cited to illustrate the possibilities for special public employment. Jobs might include tree planters, parking meter readers, teachers’ aides, aides in hospitals and nursing homes, helpers for the elderly and handicapped, and daycare workers for children. At \$5 rather than \$15 per hour of tree planters’ services, for example, it would be efficient to employ more workers and undertake more extensive reforestation. At \$3 rather than \$9 per hour of meter readers’ time, it would be productive to have meters checked more frequently. It might also be efficient to employ more readers to get around by foot rather than supplying them with vehicles. Larger numbers of special public workers could be used to assist teachers in the public schools, to provide in-home care for the elderly and handicapped, to improve services to patients in hospitals and nursing homes, and to expand the availability of low-cost daycare services. These are all areas of considerable unmet needs, where expanded hiring at union pay scales may be prohibitively costly. Many other examples could also be cited.

The substitution of special workers for regular public employees could be done equitably and efficiently. No existing public employees would be terminated to make way for relief workers; only vacancies arising through voluntary attrition would be filled by special workers. Many unskilled jobs in the public sector pay wages exceeding their private sector equivalents. Therefore, they draw a queue of applicants and often attract individuals who are overqualified and would be employed more productively elsewhere in the economy. In addition, it may not be fair to pay certain public sector employees a windfall while denying a larger number of the working poor in the private sector any work-related subsidies. The proposed income security system would provide public funds on a more uniform basis, more closely related to the actual needs of individuals. Through expanded demogrants, special public employment, and private employment subsidies, the working poor and unemployed employables would enjoy greater security of income than under the current system.

The compensation scales of special public employment should be structured so as to maximize participants’ work incentives and encourage their earliest possible return to regular work. The special pay scales should therefore be less than the individual could earn in regular employment. In some cases this would mean rates below existing minimum wage scales,³³ but pay plus demogrants must meet the criterion of income ade-

quacy for families of various sizes. As far as possible, this aim should be achieved without varying project wage rates by family size of the worker. Otherwise the special public employment may be more attractive than regular employment for workers with large families. The total income of special public employees should exceed the typical provincial Social Assistance benefit rates for unemployed employables. For example, a young single employable person currently gets Social Assistance benefits in the initial months of only \$152 per month in Quebec or \$325 per month in British Columbia.³⁴ Under the proposed scheme, a certified employable single person would earn \$5,000 or more per year from special employment even at a minimum rate of \$2.50 per hour. The \$1,200 demogrant brings total income to at least \$6,200 annually or at least \$517 per month, well above Social Assistance benefit rates. For larger families the total demogrant receipts would be larger and certified workers would typically have greater skills and work experience warranting hourly pay rates of \$4 to \$7 per hour.

Relatively low project wages allow the creation of more work positions for a given budget and expedite workers' return to regular jobs. Both effects help to ensure that special employment positions can be guaranteed to all eligible persons. The alternative approach of setting special wages at or above regular wages would create severe problems of rationing the limited positions. As previous experience with work relief has shown, this could lead to such problems as: creation of stigmatizing eligibility provisions; periodic rotation of workers off their special jobs; long waits to get onto special employment; and poor incentives for project workers to seek regular work. The proposed compensation structure seems preferable in terms of the total objectives of the income security system. One difficulty with relatively low wages for special public workers is the likely opposition of public sector employee unions. Special workers also would not have the right to bargain over their wages (any more than welfare recipients can bargain over their benefit rates). It is not clear how union opposition could be overcome, although guarantees of job security for existing regular public employees might help.

How should fiscal incentives for expanding private employment be structured? How should these provisions be coordinated with the rest of the income security system?

Work opportunities for unemployed employables can be expanded in the private sector through various subsidy and tax credit policies. A key issue is whether these policies should be targetted on certified members of the unemployed or should be available for all job seekers. The main advantage of targetting is that it facilitates much stronger incentives for employment of the certified persons. Stated another way, targetting increases budgetary economy by reducing the spill-over of the fiscal incentives to

non-certified persons. One cost of targetting is the increased administrative resources needed to implement the earnings test for certification; this cost must be set against the reduced fiscal spill-overs. Other disadvantages of targetting are its displacement of non-certified workers, its potential stigma for certified workers, and reduced participation of employers. Some displacement of non-certified workers or job applicants with skills similar to those of the certified applicants is unavoidable. However, the program could prohibit firms from hiring certified workers until they had recalled any laid-off workers in similar job categories. Then the displacement would mainly affect the non-certified unemployed — persons still drawing substantial UI benefits but not awaiting recall, and unemployed persons in families still with one substantial earner. Problems of stigma and low participation have affected previous targetted employment incentives principally when aimed at the disadvantaged and at welfare recipients.³⁵ These problems should be less acute for a program which includes many regular members of the labour force.

The next major issue in designing employment incentives is whether they should be channelled through workers or through firms.³⁶ A conventional economic model of competitive labour markets suggests that it does not matter whether a subsidy is paid on the supply or demand side; the net wage rate and employment effects should be independent of this choice. However, if wage rates are downward rigid owing to either minimum wage laws or bargaining structures, the way the incentive is paid will matter. Also, a targetted incentive will be paid only to the few certified workers in a given job category in a firm. The general wage rate for all workers in that category is unlikely to fall in response, so that little additional employment will be stimulated. Under any of these rigid-wage conditions, payment of the incentive through the worker will raise his total net wage rate but is unlikely to create a job opportunity where none was otherwise available. Conversely, payment of the incentive through the firm will increase its employment of certified workers and its total employment but will not appreciably raise the wage rate it pays. Since the proposed system is concerned more with augmenting employment than raising wage rates, it would be more effective to channel the incentives through firms. Any subsidies aimed at raising the earnings of the full-time working poor, however, should be paid directly to the workers.

The format of the targetted employment incentives should be biased to favour workers of lower skills and wages, to complement income security needs. Ideally, this would involve the use of a wage rate subsidy, which pays hourly subsidies for work at rates inversely related to the market wage rate. However, this format can be difficult to administer and enforce because it requires for each certified worker detailed information on wage rates and hours worked. A reasonable compromise would be subsidies or tax credits set at a flat dollar amount per full-time worker or per hour of work.³⁷ This format still favours the employment of lower-wage

workers, since it represents a higher percentage subsidy rate for lower wage rates. Least satisfactory would be subsidies or credits set at a flat percentage of the total earnings of eligible workers, although this would be the simplest design to administer and the easiest for firms to comply with. General non-targetted employment incentives would be useful as a companion to the targetted incentives during recessionary times. These general employment incentives would be most effective in a form which subsidized incremental or marginal employment by the firm.³⁸ The targetted and general employment incentives should be structured as outright cash payments or at least as *refundable* tax credits. These formats would encourage the participation of unprofitable business firms and non-profit organizations.

The fiscal incentives for private employment need to be coordinated with the rest of the reformed income security system. An individual would be certified as eligible for subsidized private or special public employment through a test of total family earnings and UI receipts. The individual could attempt to find a suitable subsidized position in the private sector, which almost always would pay more than the special public jobs, and could take any suitable special public job if he or she failed to find a subsidized private job. The system should as far as possible induce eligible individuals to find subsidized private jobs because they would be less costly for the government. Subsidized private work would also reduce the problem of creating a sufficient number of productive jobs in special public service. However, there should be a limit on the duration of subsidized private work — perhaps 6 to 18 months, depending on the state of the economy. Otherwise some business enterprises might, through attrition of their regular workers, permanently operate with a high proportion of subsidized workers. At the end of a term of subsidized private work, an individual would be eligible only for special public work. Neither special public nor subsidized private employment could be used to requalify participants for UI benefits.

How should the design of financial and benefit provisions of the income security system be affected by the Canadian phenomena of seasonal industries, depressed regions, and unstable work attachments?

A disproportionate share of unemployment is generated by the country's seasonal industries, often concentrated in depressed regions, and by individuals with unstable work attachments in all industries and regions. For this reason the income security problems of many Canadian workers are intimately tied to the seasonality of economic activity. However, past economic policies have added to the forces of nature in creating high unemployment. The divergent unemployment experiences of the Prairie

and Maritime provinces graphically illustrate this point. Both have suffered steady job losses from their heavy dependence upon declining industries, agriculture and fishing. Self-employed farmers on the Prairies, never eligible for UI, have adjusted by migrating to urban areas and new occupations. Self-employed fishermen in the Maritimes, in contrast, have been able to collect UI benefits in their off-seasons since the late 1950s, and have consequently felt little pressure to leave their declining industry.³⁹ The implicit UI subsidies to fishing, forestry, and construction make these industries larger, more unstable, and more attractive to workers than they would otherwise be.⁴⁰ There are also some workers in all industries and regions who prefer a lifestyle of intermittent work combined with regular unemployed spells subsidized by UI benefits. All of these effects raise the economy's average rate of unemployment and lower its level of real output as measured by gross national product.

The challenge is to remove the perverse incentives and cross-subsidies of UI while maintaining or improving the income adequacy and equity objectives of the income security system. On the program's financial side, major gains could be achieved by graduating employer premium rates according to the individual firm's layoff rate or the rate of UI benefit payments to its workers. The adoption of such an experience rating (ER) scheme would improve the inter-industrial allocation of resources by directing them away from the more seasonally and cyclically unstable industries and into the more stable sectors. This change would reduce the incidence of unemployment and therefore the required amount of UI expenditures. The use of ER would also give individual firms a financial incentive to stabilize their employment levels as far as possible. They could do this by improving their production scheduling and inventory practices, finding complementary product lines for their slow periods or off-seasons, and adopting voluntary work sharing in preference to laying off workers.⁴¹ The use of ER would further improve the cooperation of employers in effectively administering UI benefit claims, since they would not bear the UI costs from workers voluntarily quitting without cause. All of these advantages of ER could be realized without reducing the adequacy of UI benefit rates. The 1971 UI Act contained provisions for implementing ER, but these provisions were later removed in response to industry pressures and perhaps as a result of faulty policy analysis.⁴²

Modifications on the UI program's benefit side would also be desirable to reduce the incentives for unstable work attachments and to complement the pro-employment aims of a reformed income security system.⁴³ The first appropriate reform would be an increase in the entrance requirements, perhaps to a variable 15 to 20 weeks of insured work over the last year. The disqualification period for workers quitting their jobs voluntarily without good cause could simultaneously be extended from the current maximum of six weeks to an indefinite period.⁴⁴ Second, the maximum benefit durations should be more closely linked to the worker's period

of insured employment over a fairly long period.⁴⁵ Returning to a form of the “ratio rule” operative in the UI program until 1971, the claimant’s maximum duration of benefits might be limited to one week for each three weeks of insured employment over the previous three years. This formula maintains benefit durations for longer-term, steady members of the labour force but sharply reduces them for short-term, erratic, and purely seasonal workers. Third, the benefit rate could be reduced from 60 to 50 percent of average insured earnings, to improve claimants’ incentives to search actively and return to regular work.⁴⁶ The provision of expanded demogrants would partially offset this cut for single workers and fully offset it for married workers and workers with larger families.

There remains the issue of how the economically depressed regions should be treated under a system that would sharply curtail their UI payments. These regions would continue to be heavily dependent upon seasonal industries, but under the ER provisions these industries would now pay their full share of UI costs. One approach would be to give these regions expenditures for employment programs that fully offset their net losses from the reformed UI program. Yet special public and subsidized private employment in these regions is unlikely to be as productive as encouraging the out-migration of their workers to the more economically robust regions. Hence, short-term income security objectives for these workers conflict with their long-term advancement through regional migration and occupational change. For reasons of income security and political necessity, a restructured system would undoubtedly give the depressed regions a disproportionate share of pro-employment expenditures. However, some reduction in their net fiscal gains could be achieved because of the improved targetting of net benefits under the reformed system. This change would permit part of the needed long-term adjustments to take place.

Additional Details of a Canadian Scheme

This section draws together the outlined features of a reformulated structure of income security and suggests further details appropriate for a Canadian scheme. The first major element would be to replace all personal tax exemptions for filers, spouses, children and other dependants, and old age with a system of universal demogrants. The Family Allowance, refundable child tax credit, Old Age Security, Guaranteed Income Supplement, and Spouse’s Allowance would be eliminated as distinct programs. The new system would make monthly payments of about \$60 for every child, \$100 for every adult under age 65, and \$550 for every elderly person. The amount per child approximates the current Family Allowance gross payment plus the maximum refundable child tax credit. The amount per elderly person approximates the sum of current Old Age Security and maximum Guaranteed Income Supplement payments. These demogrants need not

be taxable, although there would be equity and budgetary reasons for subjecting the child and old age payments to clawback at higher incomes. The child demogrants could be raised to \$80 or \$90 per child if accompanied by a clawback. The expanded demogrants could be combined with a progressive tax rate schedule similar to the existing one. Alternatively, they could facilitate the adoption of a flat-rate income tax of the credit income tax variety.⁴⁷ All incomes would be subject to withholding at source at a basic rate of about 20 to 22 percent.⁴⁸ A surtax rate could be applied on incomes above a threshold of around \$30,000 to \$35,000 per year, with a total marginal rate of about 32 to 35 percent.

The Unemployment Insurance program would be restructured and curtailed in major ways to assist the pro-employment aims of a reformed income security system. The existing three-phase benefit structure would be collapsed to a single phase, and the extended phase for regionally high unemployment would be eliminated.⁴⁹ A ratio rule would provide maximum benefit durations of one week for each three weeks of the claimant's insured employment over the preceding three years. The variable entrance requirement would be raised to 15 to 20 weeks, and workers voluntarily quitting their jobs without good cause would be indefinitely disqualified. Benefits would be paid at 50 percent of the claimant's average insured earnings. The net effect of these changes on the incentives for unstable work would be dramatic. Under the current scheme a worker with as little as ten weeks of insured work can get as much as 40 weeks of benefits at 60 percent of his average insured earnings. In this manner he can draw benefits equal to 240 percent of his market earnings ($40/10 \times 60$ percent). Under the proposed regime he could draw benefits equalling only 17 percent of his earnings ($1/3 \times 50$ percent) from a pattern of repeated unstable work. He would have to work 39 weeks each year to draw benefits for the remaining 13 weeks. At the same time, the system preserves a full year of benefit entitlement for individuals who have worked steadily for the preceding three years.

Most special and developmental benefits of the UI program would also be eliminated, since their role would be supplanted by other provisions of the proposed income security system.⁵⁰ UI maternity benefits would be replaced with payment of child demogrants at double rates (\$120 per month or up to \$180 per month with a clawback) for the last two months of each pregnancy and the first four months after birth. Severance benefits for persons attaining age 65 would be eliminated, as they have little justification in equity terms. UI sickness benefits would be retained but the associated system of employer premium reductions would be superseded by the introduction of experience rating in UI finance. UI for self-employed fishermen would provide much-diminished net benefits with the use of ER and the ratio rule, but these benefits might be eliminated altogether if adequate employment programs could be provided in those regions. With the introduction of ER, developmental use of UI funds for work-sharing

schemes would no longer be needed. The use of UI funds for job creation projects would be superseded by large new employment programs financed out of general revenues. The use of UI funds for training projects might also be replaced by programs financed out of general revenues and open to the unemployed irrespective of their UI eligibility.

Unemployed workers with inadequate total income from UI and other family members' earnings would be certified for positions in the new employment programs. The certification procedure would be based upon a comparison of family income with a schedule of need related to family size and age composition and perhaps local living costs. Hence, applicants could readily determine for themselves whether they qualified. Tests of assets and property and investment incomes would not be essential, since few persons with substantial resources would wish to become certified. Moreover, it is important that the certification criteria be relatively simple and clear-cut in order for them to exert minimal stigma and encourage the maximum take-up. Family units with more than one unemployed employable member but only one eligible member would be permitted to choose the certified member. For large families with members earning low market wages, the income test could result in more than one worker per family being certified.

Once they were certified, individuals would be encouraged first to find a private sector job covered by the targetted employment subsidy program. These jobs would normally pay the same wage rate as regular work in the same job category at that firm. Hence, they would be more attractive to workers than the special public jobs, which would pay below market wages. The maximum duration of a subsidized private job would be 6 to 18 months, depending on the state of the labour market. After this point, or immediately for all certified workers unable to find a subsidized private job, special jobs in the public sector would be available. Certified workers would also be eligible for assignment to training programs with pay. Manpower officers would choose the workers most likely to benefit from the training experience. At any time suitable regular jobs became available, certified workers would be released to pursue these opportunities. For two or three months after leaving a special public job for a regular work position, the individual would be entitled to return to a special public job without delay. This provision would encourage special workers to take private positions even when they offered little security of continuous work.

Although the reformed system of income security for workers would be operated by the federal government, cooperation of the provinces would be needed for two important functions. First, a majority of potentially useful special public jobs lie at the provincial and municipal levels. Each province would be allowed to employ certified workers on special public work subject to federal guidelines about their use and the non-displacement of existing public employees. The province's use of certified workers could be charged as part of its regular receipt of cash transfers from the federal

government. Each province could in turn permit its lower jurisdictions to employ certified workers as part of their regular provincial transfers. The use of intergovernmental charges for special workers offsets normal public expenditures and thereby reduces the net cost of special public employment. It further serves to encourage the efficient use of special workers within the various departments and agencies; since the workers' pay would be part of the unit's budget, they would not appear to be a free resource.

The provinces' second function under the reformed system would be to provide categorical welfare for unemployed employables through liberalized Social Assistance.⁵¹ With changes in the financial provisions of the Canada Assistance Plan, the provinces could be induced to eliminate the harassing provisions currently applied to unemployed employable applicants. These barriers have been particularly difficult for younger and single persons in many provinces. Under the proposed system, an unemployed employable person would arrive at the provincial welfare agency with a certification for special work and a notice that no special public job was available for him.⁵² The notice would be provided by a federal employment officer after assessing the individual's abilities and the special jobs available in his region. Hence, the provincial welfare agency would no longer have to apply work tests itself. It might wish to apply a somewhat more refined test of need than the federal one used to certify workers — such as examining assets and property incomes. Beyond these requirements, the provinces should provide unemployed employables with welfare more readily than they do now. The provision of special public employment would serve as an effective work test and reduce the pressures to keep welfare benefits at their current inadequate levels as a “work incentive” device.

Financial Viability of the Scheme

A natural question is whether the proposed scheme is financially viable. Since the scheme itself is presented in somewhat general terms, our response will also have to be suggestive. The scheme's expanded demogrants would carry very large *gross* expenditures.⁵³ Based on the suggested payment levels, the gross costs would approach \$40 billion annually. Clawback on the old age demogrants might reduce the net costs of the demogrants to just under \$35 billion; the funds derived from any clawback on the child demogrants would be used to enrich their payment levels. Offsetting these costs would be the large savings from abolishing the Family Allowance, child tax credits, Old Age Security, Guaranteed Income Supplement, Spouse's Allowance, and all personal exemptions in the income tax. These savings would cover an estimated \$30 billion of the annual costs of providing demogrants.⁵⁴ This leaves less than \$5 billion per year of additional costs for the demogrants, or about 1.5 percent of personal incomes. A

modest increase in general tax rates, or a 1.5 percentage point increase in a flat-rate tax, could easily cover this cost.

The rest of the scheme involves a major shift of expenditures away from UI and toward the employment programs, and to a lesser extent toward liberalized Social Assistance for unemployed employables. These changes in expenditures could also be approximately offsetting. The current UI program is projected to have annual costs exceeding \$11 billion for the next several years. Our proposed changes to the program might cut its costs by one-half to nearly two-thirds, or about \$5 to \$7 billion annually. This sum could finance major increases in special public and subsidized private employment. To put the figures in perspective, let us compute the hourly rate equivalent of UI benefits drawn by a claimant. At the current \$22,000 maximum insurable level of earnings, which is just below the average industrial earnings, the claimant would draw \$13,200 per year. Based on a 2000-hour work year, this is equivalent to \$6.60 per hour that could otherwise be paid for work on an employment program. For claimants with average insured earnings below the maximum, the UI program's implicit hourly benefit is proportionately smaller.

In general, the employment programs should be cheaper than the implicit hourly costs of the current UI program. For example, subsidies for private sector employment might run around \$1.50 to \$3.00 per hour. Wages for special public employment might fall in the range of \$2.50 to \$7.00 per hour, to which administrative, supervisory, and material overhead costs would have to be added. The *net* costs to the federal government from special public employment should be significantly lower than these figures because of the reduction, through attrition, in the number of higher-paid regular federal employees and reduced cash transfers to the provinces in exchange for their employment of certified workers. Because the employment programs should have lower net costs per hour of work than the current UI program, financial resources would be left to expand employment to cover other certified unemployed workers and not just those UI claimants whose benefit durations were curtailed by the program changes. If this goal in fact required additional net revenues, the new system's pro-employment orientation might help to foster public support for the requisite tax increases or reordering of expenditure priorities.

Approaches to Implementation

There are many possible ways to reformulate and implement the income security system for workers while retaining its stimulus for employment expansion. Several features could be added, singly or jointly, to our suggested reforms of the UI program. First, regional extensions could supplement the maximum benefit durations under the suggested new ratio rule. These extensions should be provided only to regions with relatively

high unemployment rates, well above the current 4 percent threshold. To maintain the program's improved incentives, it is also essential that the extension periods should not be fixed but should increase with the individual claimant's basic entitlement period.⁵⁵ Second, the maximum annual insurable level of earnings for UI could be raised by about one-third, from its 1984 level of \$22,100 to about \$30,000. This change would improve the protection provided for workers with normal earnings above the average, and its increased costs would be fully covered by increased premium revenues.⁵⁶ Third, the benefit rate could be reduced below the proposed 50 percent of average insured earnings for longer duration claims. This provision might induce some of the unemployed to find work more quickly. However, this option is much less compelling with the proposed structure of benefit durations, and theoretical analysis of its desirability is inconclusive.⁵⁷ Fourth, in addition to an experience rating of employer premiums, the employee premiums could be experience rated based on the individual worker's claim history.⁵⁸ The arguments against this option concern mainly administrative complexity and public resistance. Moreover, a large degree of experience rating of the individual worker is implicit in the proposed benefit structure itself.

Programs of subsidized private and special public employment raise several issues for implementation. The scale of the needed work opportunities may pose problems. For example, more than 400,000 positions would be required if only 30 percent of the officially measured 1.4 million unemployed were qualified for certification based on family income. Incentives for private employment could fill a portion of the needed positions. However, special public employment would also be required, especially in depressed regions and winter periods. To avoid stigmatizing and demoralizing the special workers, it is essential that the special jobs be useful activities. If enough useful special work could not be found in a particular community, it would be better to provide certified workers with relatively easy access to Social Assistance. To minimize the effects of cyclical and seasonal variations in unemployment, work projects should be planned as far in advance as possible. The use of special workers in conventional public service work is constrained by fluctuations in their availability and by their relatively rapid turnover. The choice of work activities also must consider potential displacement of regular workers in both the private and public sectors. To relieve severe youth unemployment and reduce incentives for families to fragment, it would be desirable to allow additional family workers such as older dependent children to participate in the employment programs. However, a more global employment guarantee of this kind would be feasible only with additional funding.

The proposed system raises major issues of federal-provincial relationships in the provision of income security.⁵⁹ As previously described, the system would centralize these powers somewhat, as compared to existing arrangements. Yet, our pro-employment stance is also consistent with

substantially different ways of allocating powers between the federal and provincial governments. One could, for example, consider the highly centralized approach of federalizing the Social Assistance program.⁶⁰ Elimination of 50 percent cost sharing with the provinces would allow the federal government: to ensure national minimum standards; improve accessibility, particularly for young and single employable persons; and increase assistance for persons in the poorer provinces. The provinces could still provide top-ups to the federal assistance levels, with supplements delivered through the federal administrative apparatus.⁶¹ Another option would be to transfer directly to the provinces revenues equal to the amounts saved from rationalizing the UI program. Instead of financing federal employment programs, these funds could be used by the individual provinces to create their own job programs, expand supplements for the working poor, and/or liberalize Social Assistance for employables. Federal umbrella legislation would specify the general program requirements (as in the Canada Assistance Plan) but would leave considerable discretion to the provinces. In another area, our proposed system assumes that the federal government would obtain the revenues that the provinces (except Quebec) gain from abolition of the federal personal tax exemptions.⁶² These revenues would help to finance the federal demogrant payments. An alternative would be for the provinces to retain these incremental revenues and be given the option of supplementing the reduced federal demogrant payments.⁶³

It is natural to ask whether some elements of the proposed system can be adopted independently. This could be considered if certain elements are rejected for normative, practical, or political reasons or if piecemeal implementation of the entire system is desired. The demogrants could be introduced irrespective of any other changes and would of course be accompanied by abolition of personal tax exemptions and a range of personal transfer programs.⁶⁴ The flat-rate tax could be instituted alone (with or without a surtax on higher incomes), and the use of demogrants would complement this reform.⁶⁵ The UI benefit rate could be reduced to 50 percent of insured earnings with no other changes except the introduction of demogrant payments for adults. The UI program could adopt experience rating without other changes, but the impact upon seasonal employers might be overly harsh without the proposed reforms to UI benefit durations. And the suggested changes in UI benefit durations would necessitate expanded provision of employment programs or liberalized Social Assistance for employables. Employment programs aimed at the private sector, public sector, or both could be greatly expanded independent of other changes. However, as a partial replacement for UI benefits and Social Assistance, low-wage special employment would have to be supplemented by demogrants to ensure adequate income for workers with different family sizes. Moreover, the large funding needed to guarantee employment to certified workers may be unobtainable without the pro-

posed major rationalization of the UI program. Finally, Social Assistance provisions for unemployed employable persons could be liberalized independent of other changes. However, this would worsen work incentive problems without the simultaneous provision of an employment guarantee, and it too would carry incremental costs that might be feasible only through UI reform.

Further Policy Considerations

Certain aspects of the proposed system raise broader issues of economic and social policy. The proposal for guaranteed employment is most likely to arouse fears about effects upon particular segments of society and upon the economy itself. We have already cited the expected opposition of public sector unions to special workers performing regular public services; this would be met by improved job security provisions for existing regular public employees. There is the danger that special public employees might eventually gain bargaining rights, obtain wages on a par with regular public employees, and resist the contraction of their positions during economic upturns. Only the political forces of the day can prevent such outcomes from arising. Business groups may also fear that the adoption of guaranteed employment will undermine public resolve to resist inflation and will damage worker discipline in private industry. Indeed, some academic and policy economists argue that unemployment serves an important function in macroeconomic adjustment; they would fear the deleterious effects of employment guarantees. All of these concerns seem misplaced so long as guaranteed employment is confined to a certified minority of the unemployed, pays below market wage rates, and is reduced during economic upturns. Despite its potential hazards, guaranteed employment appears to be the only feasible way of ensuring adequate income security for the working and employable population. The primary alternative approach of guaranteeing incomes through a device like a non-categorical negative income tax has been shown to involve severe problems of cost, high tax rates, and possibly lack of popular support.

Public policy considerations are also involved in determining whether and how workers should be induced to migrate from depressed regions and remote communities to centres offering work opportunities. To what extent should the government feel obliged to guarantee employment within these areas? In locations where the government chooses not to provide such work opportunities, should certified employable jobless residents automatically receive Social Assistance? Or should they be expected to move to a place where guaranteed work activities are economically viable? Answers to these questions hinge largely upon one's values concerning individual responsibility, the role of the state, and the value of supporting the way of life in depressed regions. Undoubtedly some Canadians would place a high value upon maintenance of certain regional lifestyles,

and as taxpayers they would support more costly policies that would not compel their residents to migrate. Others would take a more individualistic view and argue that the residents of depressed regions should bear the costs if they choose to remain there. They would also cite the low housing costs and the opportunities for home production of food and services in many of these areas. The long-run resolution of poverty among employable persons in non-urban Canada hinges upon how this issue is approached in reformulating the income security system.

Our proposals have rearranged the program components of the income security system and altered their relative sizes. For illustrative purposes, the scheme has held its net budgetary requirements to the same order of magnitude as the existing system. As a consequence there must be losers as well as gainers. Practical policy assessment will be concerned with identifying these groups, which can be done here in a rough way. Net benefits are increased for persons based on an absolute measure of income adequacy and a family basis of need. Net benefits are decreased somewhat on the relative adequacy measure related to previous earnings and decreased substantially on an individual basis of need.⁶⁶ Net benefits are sharply reduced for those with seasonal and short-term attachments to the labour force; benefits to this group are now widely dispersed independent of any reliable measure of recipient need.⁶⁷ Because of the personal tax exemption and demogrant changes, most upper income households will be net losers. However, their losses may be offset by gains from adopting a flat-rate tax, depending upon the removal of tax shelters and the use of a surtax on higher incomes. Unemployed married workers with a spouse employed full time at average or higher wages will lose net benefits. Foremost among the net gainers will be young single workers, the working poor of all ages, and married workers at below-average earnings who are unemployed and do not have another substantial earner in the family. Seasonal workers will also gain so long as their families have inadequate total earnings and they are willing to participate in the employment programs.

Conclusion

The Canadian system of income security for workers and employable persons has been failing in several crucial respects. It has never been able to guarantee employment opportunities to the unemployed, even when the economy was buoyant. It has dispersed substantial benefits to many secondary workers in families with sufficient total incomes and to some individuals seeking voluntary leisure. It has provided few if any benefits for the working poor and has paid sizable amounts to irregularly or seasonally employed workers with higher annual family earnings. The system has encouraged industries, firms, and workers to expand work that is seasonally and cyclically unstable — thereby raising the aggregate

unemployment rate and driving up UI costs. It has left unemployed employables who have exhausted their UI benefits with very limited opportunities for special public or subsidized private employment. And the system has continued to subject UI exhaustees to harassing tests to obtain welfare benefits that are often inadequate.

A major reformulation of the income security system could correct most of these deficiencies. It would be designed not only to mitigate the effects of unavoidable joblessness but also to buttress macroeconomic policies in preventing unemployment. The proposed system would sharply curtail the role of UI, cutting program expenditures by one-half to two-thirds. This change would permit much lower UI premium rates and would thereby expand employment throughout the economy as labour became cheaper relative to capital inputs. Because of the ceiling on UI insurable earnings, reduced premium rates would be particularly favourable to the hiring of workers at lower wage rates and skill levels. Seasonal employment patterns would be stabilized by both the incentives for employers through experience rating in UI finance and the incentives for workers through a rationalized benefit structure. Some secondary workers who have been attracted by the current generous UI treatment of unstable and irregular work would withdraw from the labour market, improving job opportunities and perhaps raising wage rates for lower-wage primary workers. The resulting improved level, stability, and composition of regular employment would measurably reduce the need for income support policies.

Our reformed income security system would not stop simply with a reformed UI program. The proposed system would sharply expand special public employment and incentives for private employment targetted on workers in families with inadequate total earnings and UI benefits. These employment programs would be financed through general tax measures not biased against employment.⁶⁸ As far as possible the new system would guarantee employment to all certified workers. To the extent that it could not accomplish this, the certified unemployed would be given access to Social Assistance on a liberalized, non-stigmatizing basis. The payment of demogrants to all adults, as well as demogrants on behalf of children, would provide a minimal income floor against earnings losses, a supplement to the working poor, and an offset to the reduced UI benefit rate. Persons most in need would be best protected by such a rationalized system during any future attempts to cut the funding for income security programs. Viewed more hopefully, the improved performance of a reformed system might in future generate public support for increased benefit levels and expanded employment guarantees.

The suggested approach could accomplish most of the primary objectives of an income security policy. It makes employment a vital complement of income support for Canadian workers. In this way it restores important factors that have diminished under the current system — the

dignity of beneficiaries, incentives for all actors in the labour market, and the sense of personal responsibility. The proposed approach simultaneously ensures adequate support for those unable to find regular jobs and quick responsiveness of net benefits to income changes. The system provides greater interpersonal equity and would have a high take-up by eligible persons. It should be easier to comply with than the existing UI and Social Assistance programs, as eligibility provisions would be simpler and clearer. Its administration would be more complex and costly than the existing system, on account of the expanded employment programs, but the advantages justify these expenses. Upon cursory examination, the proposed system appears to be financially viable. In conclusion, a pro-employment approach to income security policy has a great deal to offer Canadian workers and the Canadian economy. Consideration of a comprehensive income security system following these general lines is long overdue.

Notes

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1. In part this choice is based on the provincial locus of responsibility for most of these programs. Other than Social Assistance, the provincial role in income security programs is relatively small in budgetary terms. See Fortin, "Income Security," Table 4-1, in this volume for a listing of the major programs; and Canadian Intergovernmental Conference Secretariat (1980) for a review and discussion of the federal-provincial jurisdictional aspects.
2. A demogrant is a payment made regularly to all persons with a specified trait, such as age, but without any prior test of their income level. Thus the *gross* benefits are paid universally, and any targetting of *net* benefits is achieved *ex post* — by taxing the payments at progressive rates or applying income-related clawback provisions. Family Allowance and Old Age Security are Canadian examples of demogrant programs.
3. Mendelson (1984) also provides persuasive arguments against what he calls the "big bang" approach to rationalizing the income security system.
4. The requisite changes in public policies affecting monetary and fiscal stabilization, labour and industrial practices, business subsidies and regulation, trade and tariff barriers, training and education, and wage and work-hour provisions are subjects of other Commission studies. Corporate and personal tax provisions also affect firms' desired capital-labour ratios, worker skill mixes, and the regional and occupational composition of employment, and they warrant careful review.
5. Net benefits will increase for persons in situations deemed relatively more worthy of support than others. Most persons suffering net losses of benefits will not be in the neediest households, but some may still have incomes well below average. Only a much more costly scheme than the current system could avoid reductions in benefits for everyone.
6. For a similar discussion concentrating on unemployment insurance, see Kesselman (1983), chap. 2.

7. The views adopted here in part reflect responses to Decima Research survey questions analyzed in Johnston (1984), as well as the author's own reading of the public mood. The Decima findings are ambiguous in important respects but show widespread public support for: a "guaranteed annual income" (with guaranteed employment?); for the government to create jobs by giving funds to private companies as against direct hiring; for tightening the eligibility for UI benefits (in what respects?); for increasing the "amount" of UI benefits (percent of insured earnings or maximum insured level?); and moderate preference for giving government benefits (gross or net?) only to the needy rather than to everyone.
8. In addition, some individuals will choose to work in the underground economy, which includes illegal activities and legitimate activities that evade tax on their earnings. This choice will be affected both by the terms of the special employment positions and the rates of income taxation and of benefit reduction in the income security system.
9. For evidence on administrative costs as a percentage of total costs for various types of income security programs, see Mendelson (1979), and Kesselman (1982b), p. 253.
10. For such design details on the negative income tax, see Hum (1981a); for the credit income tax see Kesselman (1982b).
11. These figures are based on statistics for 1983 and fiscal 1983–84 taken from Canadian Tax Foundation and Statistics Canada sources. The measure of personal incomes excludes current transfers from governments. The funds needed for general federal and provincial revenues has netted out costs of Family Allowance, Old Age Security, the Guaranteed Income Supplement, and Spouse's Allowance; including these would raise the requisite tax rate to 16.5 percent of adjusted personal incomes.
12. Atkinson (1984) estimates that recent British proposals of the CIT variety, with partial categorical treatment but still relatively generous non-categorical credits, require a basic tax rate of at least 47 percent and possibly exceeding 50 percent.
13. To illustrate this proposition, assume that credits of 50 percent of average per capita incomes are paid to the 20 percent of the adult population deemed unemployable; the remaining 80 percent receive credits equal to just 10 percent of average per capita incomes. Then the requisite tax rate equals 18 percent for credits (50 percent \times 0.20 plus 10 percent \times 0.80) plus 12 percent for general revenues, or a total rate of 30 percent. This is less than half the tax rate required by the illustrative non-categorical program. Akerlof (1978) has proved the use of categorical treatment in a CIT program to reduce adverse incentive effects as well as reduce budgetary costs.
14. The marginal tax rates for the NIT include both the benefit reduction rate and the rates applied in the positive income tax system. The proof appears in Kesselman (1982b), pp. 276–78.
15. The Earned Income Tax Credit in the United States provides an earnings subsidy for low earners with benefits phased out at higher earnings. There is no such federal program in Canada, but three provinces (Manitoba, Quebec, and Saskatchewan) provide income supplements for the working poor. Two of these programs restrict payments to families with children, as does the U.S. scheme. See Hum (1983), pp. 64–67.
16. For an early proposal of categorical income security designed to optimize work incentives, see Kesselman (1973).
17. It may prove useful to offer a second, lower tier of income maintenance for employable unemployed individuals who refuse to participate in the work programs or whose attendance or performance is grossly unsatisfactory. See the Quebec scheme in note 34 below.
18. A comprehensive income security scheme should also include reforms to permit public authorities to enforce cross-provincial payments of child support by absentee parents.
19. For further details and proofs of the preceding propositions, see Kesselman and Garfinkel (1978); Mendelson (1980); and Kesselman (1980).
20. Statements of the more conventional view on selectivity appear in Economic Council of Canada (1978), chap. 6–7, Reuber (1978); and Business Council on National Issues (1983), pp. 49–52; and they can be heard from political figures almost daily. Blomqvist (1984) attacks "universality" as economically inefficient, but a reading of his note (p. 55) clarifies that he means only universal payouts not accompanied by some form of tax recovery or clawback for higher income families.

21. Also see Krashinsky (1981) for analysis of similar factors that relate to the subsidy methods used for social service programs.
22. See Mendelson (1981) and the studies in Garfinkel (1982).
23. For discussion of this rationale, see Richardson (1960), chap. 3–4, and Kesselman (1983), pp. 8–17. See also Blomqvist (1984) on the distinction between redistributive and social insurance programs.
24. A detailed analysis of the personal exemptions, demogrant programs, and refundable child tax credits appears in Kesselman (1979). Also see Kapsalis (1980).
25. Workers currently report the amount of Family Allowances received on the TD1 Form, so that employers' tax withholding could reflect these receipts. More complex clawback schemes could readily be implemented via the TD1 Form, although tests based on the joint incomes of both parents would require some year-end reconciliation.
26. Taxing the demogrant under a fully flat-rate tax system would be equivalent to paying out smaller but non-taxable demogrant.
27. This provision would be unjustifiable in a pure social insurance program; it should be abolished with the introduction of experience rating and the modified UI benefit structure proposed later in this study. See Kesselman (1983), pp. 124–30.
28. See Cloutier and Smith (1980). For a similar proposal based on a tax clawback, see Osberg (1979). Kapsalis (1979) and Kesselman (1983), pp. 8–13, offer critiques.
29. Note that general tax rates would be increased to offset the revenues lost from reduced UI premium rates. Regardless of whether revenues are offset through personal or corporate income taxes or sales taxes, they will be less biased against employment than UI premiums. Our proposal to experience rate employers' premiums will discourage employment only in very unstable or seasonal lines of work.
30. Analyses of the UI program's work requirements indicate that they are useful in reducing unemployed spells and some claimants' pursuit of subsidized voluntary leisure. See Cousineau, "Unemployment Insurance and Labour Market Adjustments," in this volume.
31. The 1930s experience with large-scale work relief in the United States can be highly instructive in the design of contemporary special public employment programs. See Kesselman (1978) and works cited therein. Also see the other studies in Palmer (1978).
32. Of course, certain services traditionally produced in the public sector might be more efficiently produced in the private sector. These services could be privatized with continued public finance provided through tax concessions or subsidies for employment of certified workers.
33. The author accepts the evidence that minimum wage laws have to some extent reduced employment opportunities, particularly for teenage and other inexperienced workers (see West and McKee, 1980). He also accepts the evidence that some aspects of collective bargaining and income security programs have increased unemployment. However, he does not adopt the more extreme view that abolition of minimum wage laws, trade unions, and income security programs would yield a full-employment economy. As stated in this study's introduction, certain reforms of income security can contribute significantly to lower unemployment, but achieving full employment will depend upon improved macroeconomic performance.
34. At the time of writing, the Quebec government was beginning to implement three programs by which single claimants aged 18 to 30 could double their benefit rates. These methods were: returning to high school; performing at least 80 hours of public service work per month; or participating in job training. The Quebec rate for single claimants aged 30 and older was \$418 per month (*Globe and Mail*, June 25, 1984, p. 5).
35. See O'Neill (1982).
36. For discussion of the issues in designing these employment incentives, see Hamermesh (1978) and the studies in Haveman and Palmer (1982).
37. The Canadian Employment Tax Credit program utilized this hourly format, but the credits themselves were taxable.
38. See Kesselman, Williamson, and Berndt (1977) and Hamermesh (1978).

39. In addition to the UI explanation, differences between the industries reinforce these results. Fishing involves a common property resource, and the inshore fishery can be entered with modest capital. Farming involves privately owned or rented land, and technological changes have increased the minimum efficient scale of farm operations and the requisite capital.
40. Some rough estimates for 1973 show the inter-industrial cross-subsidies to be at least \$240 million per \$1 billion of UI premium finance (Kesselman, 1983, pp. 146–47). For further evidence on the cross-subsidies of UI, see Kapsalis (1978).
41. Ironically, the perverse incentives for firms to engage in temporary layoffs that result from the absence of ER have led to the special provisions for payment of UI benefits to workers in firms entering work sharing agreements. See Kesselman (1983), pp. 79–80.
42. Extensive analyses of ER, past Canadian consideration of the proposal, and references to the topic are provided in Kesselman (1983), chap. 9. Also see Stoffman (1984).
43. Useful critical reviews of the extensive literature on labour-market effects of Canadian UI benefits are provided in Cousineau, “Unemployment Insurance and Labour Market Adjustments,” in this volume; Hum (1981b); and Green and Cousineau (1976).
44. Variants of the two preceding recommendations were put forward by the UI Task Force in 1981 but were not implemented. See the justifications advanced in Canada, Department of Employment and Immigration (1981a).
45. There is strong evidence that UI benefits are used disproportionately by a relatively small group of repeat claimants (Glenday and Jenkins, 1981), that most UI exhaustees usually find work relatively quickly after running out of benefits, and that UI exhaustees typically have very unstable employment patterns (Canada, Department of Employment and Immigration, 1981b).
46. The choice of a 50 percent replacement rate is based upon analysis of UI as pure insurance rather than income redistribution. The worker values reduction in the income risk from unemployment but is induced to search less intensively and prolong his unemployed spell by the provision of UI; an optimal replacement rate depends upon the balancing of these two effects. See Baily (1978), and Flemming (1978).
47. It would also be desirable to move from the current hybrid income tax base to a simpler, more neutral tax base, such as personal consumption or real receipts. For a non-technical discussion of these choices, see Kesselman (1982a).
48. Canadian flat-rate income tax proposals examined by Walker (1983) and Smith (1984) find that a rate of about 19 or 20 percent, with a broadened tax base but retaining substantial personal exemptions, would be needed. Since our scheme would not offer exemptions, the net incremental costs of its demogrants (beyond the existing cost of Family Allowances, OAS, GIS, Spouse’s Allowance, and child tax credits) should be relatively small. An estimate of 1.5 percent of personal incomes is presented later in the text.
49. Glenday and Jenkins (1981) have found that the program causes the unemployed in the most depressed regions to spend less time without a source of income than the unemployed in high-growth regions. See also note 55 below and the related text for discussion of an optional regionally extended benefit phase.
50. Most of the issues in this paragraph are treated in Kesselman (1983), chap. 5 and pp. 103–14.
51. See Hum (1983) for discussion of the related issues. Social Assistance also needs to be restructured for improved work incentives; see Allie and Lefebvre (1983), and Simpson and Hum (1984). However, the proposed system would make these reforms less crucial.
52. To bridge the time gap between certification and either placement of the worker in a special job or determination that no special job is available, the federal agency could make an initial payment at the time of certification.
53. Mendelson (1980) has suggested that the cost of demogrants be entered as negative taxes, or tax expenditures, on the revenue side of the government’s accounts rather than on the expenditure side. This approach would be consistent with the National Accounts method and might also help to make substantial demogrants more palatable politically. Of course, such a change in accounting practices has no impact on the required positive tax rate.

54. The estimate is based upon fiscal 1983–84 figures for the spending programs, netting out the estimated federal and provincial taxes paid on benefits. It also takes estimates of the federal and provincial revenue costs of all personal exemptions for 1977 and scales them up by the indexation rate through 1984 plus an additional 10 percent to reflect the growing number of tax filers. See Kesselman (1979).
55. This approach to regional extensions was suggested in the 1981 UI Task Force version of Kesselman (1983) and was supported and analyzed in Glenday and Alam (1982b), pp. 19–26. See also Glenday and Jenkins (1981). An illustrative schedule would be: no extension for regional unemployment rates below 10 percent; extension equal to 10 percent of the claimant's basic entitlement for 10–12 percent unemployment; 15 percent extension for 12–14 percent unemployment; 20 percent extension for 14–16 percent unemployment; 25 percent extension for 16–20 percent unemployment; and 35 percent extension for above 20 percent unemployment.
56. This reform would be much less attractive without the adoption of ER and the revised benefit structure. See also Kesselman (1983), pp. 88–91.
57. Flemming (1978), p. 424, briefly discusses the arguments and provides two references.
58. The issue of experience-rating employee premiums does not arise in UI programs in the United States, since employers pay all of the premiums. Note also that the 1971 UI Act in Canada proposed experience-rated employer premiums but uniform rates for employee premiums.
59. Blomqvist (1984) provides an insightful analysis of the changing balance of federal and provincial powers over the provision of income security and the relation to broader issues of redistribution.
60. Mendelson (1984) suggests this approach, arguing that the federal government has the legal jurisdiction to introduce income transfer programs unilaterally. Such a change would carry significant net costs for the federal government.
61. This approach is already used in provincial supplements to federal Guaranteed Income Supplement recipients.
62. Note that the provinces would also lose revenues they currently obtain from taxing various transfer payments abolished under the new system, so that the federal government would have to recapture only the net revenues. Moreover, the federal government could obtain all the revenues of a clawback on certain demogrants.
63. The provinces currently have the option of varying Family Allowance payments according to the age of the child or the number of children in the family. Alberta and Quebec do this.
64. Or, in a smaller move, child demogrants could be introduced with or without clawback while abolishing the three child-related tax and transfer provisions.
65. In fact the elimination of all personal exemptions would considerably strengthen the case for adopting some variant of a flat-rate tax. This is a consequence of the increased number of taxfilers in the absence of exemptions and the offsetting reduced need for filing of tax returns under a broad-based flat-rate tax with expanded source withholding.
66. However, relative income adequacy would be improved for many above-average earners under the option of raising the maximum UI insurable level of earnings by one-third. Cloutier (1978), p. 44, estimated the following distribution of UI benefits for 1975, after netting out most costs of financing the program: heads and unattached individuals, 13.8 percent; "wives," 55.4 percent; and other family members, 30.8 percent.
67. For unemployed spells in which UI was collected during the period 1974–79, an estimated 60 percent of claimants in seasonal and cyclical industries earned at or above the maximum insurable rate but only 30 percent of claimants in the other industries did so. And 85 percent of claimants were male in the seasonal/cyclical industries, whereas only 51 percent were male in the other industries. See Glenday and Alam (1982a), p. 43.
68. The Economic Council of Canada (1983), pp. 104–105, proposed reorienting the UI program to promote employment through "job vouchers" for claimants. Their approach differs from ours in that they would leave the heavy burden of UI premiums and their associated disemployment effects. Their approach would also give the insured unemployed preferential status in hiring — which might be undesirable on both equity grounds and incentives for employers to churn their workforces.

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